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GLEANINGS IN BEE CULTURE

Vol. XXXV

August 15, 1907

No. 16



Apiary at St. Mary's Abbey, Buckfast, Devon, England. Monastery in background, with window of bee-keepers' room looking toward the apiary.
Photographic competition, Class F.

The A. I. Root Company, Medina, Ohio, U. S. A.

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STATE FAIR AT DETROIT AUG. 29 = SEPT. 6

We will be more than pleased to have you call on us, and make yourself known. Our exhibit will be under the grand stand. We have set September 3d as a day especially for bee-keepers; and if you want to meet other bee-keepers at the fair, come on that day.

We will have on display "Everything for the bees, and all Root Quality."

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& SON, REDFORD, MICH.**



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GLEANINGS IN BEE CULTURE

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Vol. XXXV.

AUGUST 15, 1907.

No. 16.

STRAY STRAWS

by Dr. C. C. MILLER

ROOSEVELT's improved spelling is endorsed by the National Educational Association. Good!

H. ROTH reports (*Schweiz. Bzg.*, 32) that for years he has planted tomatoes before his bee-house, and it keeps the ants away. [We do not believe this; that is to say, we know of no scientific reason why tomato-plants would keep ants away.—ED.]

BRO. DOOLITTLE, please give p. in *American Bee Journal* where I say that bees do not gather both pollen and honey on the same trip from clover. I don't know what I may have said, but I know I always believed just the reverse of what you state on page 1015.

IT IS SAID, sometimes, if not generally, that the difference between the piping and quahking of queens is merely a question as to whether they are in or out of the cells, the same sounds being made in either case, the deadening of the sound by the cell causing the quahking. A little observation will show this to be an error. The piping always begins with a long-drawn-out note; the quahking, never.

THE BEE, says R. France, in his book, "Das Liebesleben der Pflanzen," is no reflex machine, but a being with memory, which gathers experience and knows how to turn it to good account. In one day it attains to as much experience as a child in its first year. On its first day afield it needs the bright color of the flowers to attract its attention; but a day or two later it will visit them just as readily if all the petals be removed.—*Ill. Monatsblaetter*.

WM. KOHLMAYER has been keeping bees half a century, and never found any use for religion—wants bee culture and religion kept separate, p. 1033. Queer, now, how different people are! I've been keeping bees nearly half a century, and found use for my religion right in the apiary. I have had ever so good a time by not separating the two. I wonder, now, friend K., if you ever gave religion a fair trial along with bee culture, and if so, what brand you tried.

"REMARKABLE PROGRESS of prohibition in the South" heads an editorial in a Chicago daily, which says:

All Tennessee is dry, except the cities of Nashville, Memphis, and Chattanooga. In Kentucky, ninety counties out of the 119 into which the State is divided are dry, and even in the "wet" counties there are many prohibition precincts. In Texas, Mississippi, and North Carolina the majority of the counties are said to be dry. Perhaps the most efficient single cause of the progress of prohibition is the feeling that the saloon is responsible for much of the crime committed by the lower elements of the colored population.

Just so; and perhaps it may be discovered that the saloon is also responsible for nearly all of the crime committed by the lower elements of the white population in the North.

HERR U. KRAMER (*Schweiz. Bzg.*, p. 115) says it is a mistake to suppose that all workers in their youth engage in brood-rearing. In April and May plenty of young bees can be seen quietly remaining unoccupied about the brood-nest until the harvest calls them to other work. Herr Kramer is good authority too. [Has any one ever claimed that young bees devote their whole time to brood-rearing? We know that old bees, under some conditions, will rear brood. If there were a paucity of fielders it is reasonable to suppose that young bees that could fly would go to the field at an age younger than ordinarily.—ED.]

J. A. GREEN, you say, p. 1015, "I caged a queen with the usual escort to take to an out-apiary." I never thought of using an escort in such a case. Is it the usual custom? What is the escort for? [If the queen were to be introduced within an hour or two it

would be far better to give her to a colony without an escort. The presence of worker-bees in an introducing-cage is likely to affect adversely successful introduction. Some of our breeders go so far as to stipulate that the workers be taken out of the introducing-cage before the queen is given to the bees.
—ED.]

WHAT MAKES bees swarm? E. W. Diefendorf, *Bee-keepers' Review*, 211, ventures as a possible answer to the question that the queen is tired, and he supports his guess with such good arguments that he is likely to make not a few converts to his belief. But I've known a queen to be caged in a hive a week or more when one would have thought she would be thoroughly rested, and then to swarm out within a few hours after being liberated. Once I gave to a swarming colony a queen not two weeks old. She swarmed next day. [The theory that fatigue on the part of the queen induces swarming is hardly tenable in view of the evidence that can be produced to the contrary on this point.—ED.]

THE QUEEN and half the brood was taken from a colony, and foundation alternated with remaining brood-combs. A few days later a queen-cell containing a larva was found on the foundation.—*L'Apiculteur*, 297. I've been skeptical as to bees carrying eggs or larvæ; but I don't see how to account for this case otherwise; but I should like to know whether said larva turned out to be a queen or a drone. [Don't you remember, doctor, that we have reported having seen bees carrying eggs? In a queen-rearing apiary there are so many proofs that they must necessarily do so that one who has been in the business for a year or more could scarcely doubt the feasibility of their doing it.—ED.]

REPLYING to your question, Mr. Editor, p. 1009, I think the general opinion is that the fertilization of the egg depends upon the will of the queen; but I said the preponderance of argument was not on that side. Ralph Benton says worker eggs are laid in drone-cells, but he does not add, "without the mouth of the cell being narrowed." Is there a definite instance on record of queens laying worker eggs in drone-cells without such narrowing? [We, perhaps, should have published that other testimony, then you would have no doubt. Apparently you attach no importance to the fact that a queen will lay worker eggs in Swarthmore queen-cell cups (larger than drone-cells) which we mentioned in the last issue, page 1008, and those eggs will produce females. This in itself should leave no doubt in your mind or else we don't understand your point.—ED.]

HERR SPUEHLER, *Schweiz. Bztg.*, 242, relates a case in which an Italian queen was introduced into a black colony. In due time Italian workers appeared, living peaceably with their black sisters. But as soon as the Italians became old enough to stand guard at the entrance they stung all their black sisters returning from the field. [This seems hardly possible; yet, assuming that Herr

Spuehler reported the facts correctly, we should have to assume that the case is a very abnormal one, or one in which the exception proves the rule. There is no color distinction among bees. The case given might be explained by saying that the black robbers from other hives came to the entrance of the colony and were promptly repelled. The old black bees of the hive would naturally die off in the mean time, and one might very easily mistake the blacks from another hive for those belonging to the colony itself. Our friend might have been deceived in what he supposed were the rightful black bees of the hive.—ED.]

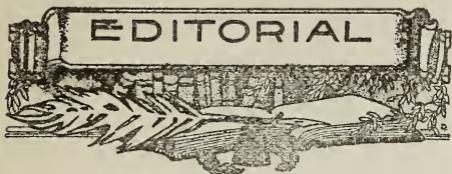
E. E. HASTY gives a very interesting table showing the number of swarms that issued during each hour of the day for a period of seven years (*American Bee Journal*, p. 504. Here's the table:

Between 5 and 6 A.M.	.....	1
6 and 7 "	.....	2
" 7 and 8 "	.....	45
" 8 and 9 "	.....	75
" 9 and 10 "	.....	129
" 10 and 11 "	.....	99
" 11 and 12 M.	.....	76
" 12 and 1 P.M.	.....	81
" 1 and 2 "	.....	63
" 2 and 3 "	.....	45
" 3 and 4 "	.....	36
" 4 and 5 "	.....	12
" 5 and 6 "	.....	2
total .....	.....	666

Not worth his while to watch for swarms before 7 A.M. nor after 4 P.M. [Hasty's very carefully prepared table fully supports the statements in our text-books, that swarms come out mostly between the hours of 9 and 2 o'clock. But his figures are a good deal better than mere guesses.—ED.]

MR. EDITOR, speaking of two queens, p. 1008, you say, "When they got together there would be a fight between them." I arise to remark that there will not always be a fight between them unless they are virgins. I have had two queens in the same cage without fighting. I never saw two laying queens fight. Is it the rule that they do? [You are correct, and we accept your amended statement, except that we do not agree with your implied statement that two laying queens together generally would not fight. Mr. C. F. Bender, an old correspondent of GLEANINGS, and who is now with us, reports that he several times, for the sake of amusement, took two laying queens which he was about to supersede, and put them together on the ground. When so placed they would invariably fight to a finish, as he found by repeating the experiment. The queen that happened to get the best hold was the victor. We think it is probably true that two queens that get together in a colony of bees often will not fight, but even then it by no means follows that they generally will not. You are correct in believing that virgins would fight; but here again there are exceptions. Not six weeks ago we found in one hive nearly a dozen virgins on one frame, living peaceably together. It was a case where a lot of cells had been given to the colony to complete,

and they had hatched before the apiarist got around to them. Some of the queens were from two to three days old, and yet there they were all together like a happy family. Not wishing to take any chances on them we caged them. Very sorry now that we didn't let them stay and then watch for developments.—ED.]



WE regret to learn that Mr. N. D. West, one of the foul-brood inspectors of New York, lost his son David in a runaway accident. This young man looked after his 500 colonies, and was the one who made the queen-cell protectors and cages. The loss will be a severe one to Mr. West, and he has our sincere sympathy.

AT a meeting of the Central Society of Apiculture for France, held June 23, at the society's rooms in Paris, it was decided there would be a smaller crop of honey this year than last, hence it was decided to ask for all extracted honey 1.30 francs a kilo (about 12 cents per lb.), if the honey was in fairly small lots. For larger quantities, 1.20 francs would be considered very fair. All bee-keepers connected with the society are expected to abide by this decision in the general interest of bee-keeping. These are wholesale prices.

ENCOURAGING COUNTY FAIRS.

IT is with considerable pleasure we note the fact that for some reason or other the fairs are offering better premiums on bee, honey, and wax exhibits than ever before. In point of fact, some of the prizes are very liberal (not too liberal). For example, Tennessee offers \$25.00 for first, \$15.00 for second, and \$10.00 for third prize on the best exhibit. Other prizes are in proportion. Illinois and West Michigan are also quite liberal. We hope bee-keepers will encourage all fairs whose managers are doing their best for apiculture. We believe a fair is a good place to advertise honey and wax. If your local fair is not doing much for bee-keeping, see the managers and point out what others are doing.

AMERICAN BEE JOURNAL.

THE Old Reliable is now issued as a monthly of 32 pages at 25 cts. per year, instead of a weekly of 16 pages at \$1.00. The new monthly has a new half-tone cover that is very neat, and the general make-up, appearance, and contents are practically the same as heretofore. The low price of the

publication, 25 cts. per year, and the general excellence of the matter, should and probably will make it very popular. We wish it abundant success.

A BEE-STING THAT IS ALLEGED TO HAVE CAUSED LOCKJAW.

A STATEMENT has appeared in the papers to the effect that a boy four years old was stung in the back of the neck. Nothing serious developed until the next day when a hardening and a swelling of the neck and a stiffening of the muscles resulting in what is known as tetanus, or lockjaw, and finally death. The best physicians were consulted and were at a loss to account how a bee sting could cause such disease. The suggestion was made that the child playing in the dirt may have rubbed his hands containing more or less of earth over the wound. As lockjaw is a germinal disease that resides in many soils it might have been transmitted by the hands, for a a sting will sometimes make a wound that will bleed slightly, and hence a wound open enough to receive infection from the hands contaminated with earth. Since the sting itself is supposed to contain a violent antiseptic it does not seem possible that lockjaw could proceed as a direct result of the sting itself. The case, if so, is a very rare one and probably will not occur again.

Of course, some newspapers may try to make a handle of this to the effect that no one should keep bees for fear of lockjaw; and indeed one paper referring to the subject said "It would mean a new and graver problem in connection with bee farming." Grave problem indeed! The practical bee-man has had too many stings to be worried over the possible prospect of dying by lockjaw.

Later.—Our representative in Philadelphia, where this case occurred, reports that he managed to arrange an interview with Dr. Brady, one of the staff of Frankford Hospital where the boy was treated. The doctor gives it as his opinion that the sting had nothing to do with the lockjaw. His opinion is based on the fact that there was no local infection whatever under the skin nor in the flesh, that the *post mortem* could discover. A full report on the *post mortem* will be out in about a week.

DR. WHITE AND HIS DISCOVERY OF THE ORIGIN OF AMERICAN FOUL BROOD.

THE United States Department of Agriculture has just issued circular No. 94 on "The Cause of American Foul Brood," which constitutes a sort of addendum to "The Brood Diseases of Bees," which was issued in pamphlet form some time ago. The author is Dr. G. F. White. He now reports that he has been successful in cultivating in a suitable medium *Bacillus larva*, and producing therefrom American foul brood by direct inoculation, thereby proving that he has, beyond all question or doubt, discovered the true origin of old-fashioned or American foul brood.

He gives it as his opinion that what Dr. Maassen, of Berlin, terms *Bacillus Brandenburgensis*, and what Buttel-Reepen calls *Bacillus burri* are neither more nor less than *Bacillus larva*. If this is so, the chain of evidence in favor of Dr. White is complete.

Any reader desiring a copy of this circular can obtain it by addressing Chief of the Bureau of Entomology, Washington, D. C.

HOW FAR MAY SWARMS FLY?

A SUBSCRIBER wishes to know what is the longest distance a swarm of bees has been known to travel to take up its new abode. If any one has any actual data upon the subject we should be pleased to have him write us. We are of the opinion, however, that the distance it would go would not exceed three or four hours of flight, or at a maximum of ten miles. The bees of a swarm are usually heavy with honey, and such bees can not fly very far without exhaustion. We know that bees filled with nectar from basswood seem to be about tired out, and it is probable that the most of these bees have not flown to exceed two miles.

THE 1907 CROP LIGHT.

IN many localities, as reported in our last issue, there was a change for the better; but it came too late to insure very much of a yield. Honey is still coming in, in many places. Even white clover, where it rains every now then, continues to yield a little. Many localities are having a light flow from red clover, which the farmers have been unable to cut, owing to the lateness of the season. Sweet clover is yielding well, but the laws in the various States are requiring it to be cut, while the oxeye daisy, the wild parsnip, and other noxious weeds are allowed to grow. In a word, the crop will be light and somewhat mixed. It will probably be late in getting on the market; and right here bee-keepers are making a mistake in holding if they have any to sell.

There will be some honey from California; but while the crop is light the quality is extraordinarily good.

R. C. Aikin, under date of July 22, reports for Colorado that they are just entering on the best part of the season. The weather is fine and promising; but he says that unfavorable weather might yet spoil the chances for a fair crop.

Reports from Michigan, New York, and Wisconsin show that some honey has been coming in; but it is clear now that the crop in all three of the States named will be light, unless from buckwheat.

We shall be pleased to get reports from bee-keepers everywhere; for the season is so changeable that what is true at one time may be modified at another.

competitor of honey because it comes on at just the time our product is offered for sale. Our older subscribers will remember how commission men and honey-buyers have repeatedly remarked that, during the time when fresh fruit is coming on, honey prices are apt to ease up; that, after the fruit season is past, the honey market becomes firmer. With no fruit in sight, and with a light crop, and with State and national pure-food laws in operation as they never were before, honey ought to sell at the prices that ruled in the early days of bee-keeping. The trouble is, a lot of fellows who "can't afford a bee-journal" will sell at any old price. But the bad spring has probably put most of these out of business.

LATER—PRICES ON HONEY GOING UP.

THE honey market in this issue will be of great interest to those who have any honey for sale. Notice how the quotations are jumping upward. Indianapolis, for example, quotes the best extracted in five-gallon cans at 11 to 12 cts., and best comb at 19 to 20. The *Pacific Rural Press* says that California honey is selling on the coast at 7½. Bear in mind that these prices are *wholesale*.

Now that the national and State pure-food laws are in force something will be doing, for the trade is fairly howling for honey. Glucose can not piece out a light crop any more. We firmly believe that the best grades of comb honey should not be sold to the grocer for any thing less than 20 cts., to say the least. While extracted may not be able to hold its own, that in the comb should rule firm. Hip, hip, hurrah for the upward climb in honey prices!

A CITY COUNCIL VERSUS THE BEES.

A LOCAL newspaper, *The Hudson Morning Republican*, for July 18, contains a very readable article which treats quite at length on the status of the bee industry as a whole. The author of the contribution is James McNeil, who is not unknown to fame as a bee-keeper. The occasion which has drawn out Mr. McNeil from his usual silence is the discussion of a complaint against a bee-keeper of Germantown, Columbia Co., N. Y. The complaint in question was lodged before the board of health for Germantown by a fruit-grower who, it seems, averred that bees kept by a neighboring bee-keeper sucked the honey from the fruit-blossoms until they were worthless. For consummate ignorance about his own business—the pollination of fruit-blossoms—this beats the world. From what we glean the board of health has in view the passage of an ordinance declaring bee-keeping in the village a nuisance.

Mr. McNeil has pointed out in his article that a board of health has no jurisdiction in a matter of this kind. The place to lodge such complaints is the Department of Agriculture at Albany. A board of health has a clear right to regulate matters pertaining to the public health, *and no more*. This looks like a clear case of pernicious activity. Mr.

THE PRICE OF HONEY FOR THE YEAR 1907.

WE can now say definitely that the honey crop for 1907 is very light. There is almost no fruit on the market, and that is a strong

McNeil is well posted on the law of bees, and is evidently in touch with the Manager of the National.

The board of health ought to read up on the Arkadelphia, Ark., and Rochester, N. Y., cases, where the authorities of these places tried to have bee-keeping declared a public nuisance. They were promptly squelched in the courts. Cases of this sort show the necessity of bee-keepers being banded together for mutual defensive purposes.

Later.—The case has been dropped.

GOLDENS FOR HARDINESS.

SINCE our editorial on p. 889, July 1, regarding the lack of hardiness in some strains of extra-yellow bees we have received several letters from breeders of these strains, together with letters from their customers, to the effect that these bees are not lacking in hardiness. One writer from Kansas City, Mo., in speaking of a queen of the Swarthmore strain, cites the fact that the colony with this queen produced 156 lbs. of fancy comb honey, selling at 25 cts. per lb. Furthermore, there was no swarming from this hive, and they wintered perfectly. We believe the wintering problem in the latitude of Kansas City would be a much less difficult one than it would be further north.

Of course, in the North, or elsewhere, where one is looking more for color than for other desirable qualities, there will always be a considerable demand for them on this account. We have no intention of decrying their value, for there will always be more or less demand for them in the North, and in the South we think that, in many instances, they will be equal if not superior to the ordinary three-banded stock; but in view of the reports of a number of large reputable bee-keepers of their large winter losses of these bees as compared with the three-banded Italian, Carniolan, and Caucasians, under similar conditions, we felt that the publication of these reports was due our readers. It is the duty of this journal to state the facts, cut where it will.

THE USE OF THE NATIONAL FORESTS; BEE-KEEPERS' RIGHTS AS TO OVERSTOCKING PROTECTED.

WE have just received a copy of a book issued by the Forest Service at Washington bearing the above title. It is quite different from the "Use Book" issued by the same authorities. This one is intended for popular use and to a great extent answers the criticisms which have been hurled at the Forest Service of the United States government.

From this book we glean the important fact that the area of the forest reserves in United States, Alaska, and Porto Rico, is almost 150,000,000 acres, which is large enough to be considered an empire.

An idea has gone abroad that forest reserves are closed to private enterprise. This is not the case, however. On the contrary, cattle and sheep ranching, mining, hunting, and

bee-keeping go on just the same as on the public range, except there is a certain amount of government regulation to protect the timber from thieves and forest fires. Land suitable for agriculture may be homesteaded. Mining may go on as on the range. Timber for building a house is allowed all settlers, and firewood is free to all. Lumbering can be done only after a contract has been made, and always under government supervision. The timber is handled in such a manner that cutting never ends. Ranching is allowed as usual, but the number of cattle or sheep is limited to the number the land will support, and measures will be taken to increase the pasturage. The cattle-men are expected to pay a fee for this service, and they are glad to agree to this, as they get protection and a good range for their animals. There can be no cattle-men's and sheep-herders' wars on a forest reserve.

Where the matter vitally interests a bee-keeper is in the regulations for the prevention of overstocking. In doing this the government does the bee-keeping interests a great service. And it may go further, if the bee-keepers ask for it, and much of the land may be seeded down with honey-plants such as alfilaria, sweet clover, white clover, and similar pasture plants.

By careful attention to this detail the Forest Service can do a very important work for the benefit of the bee-keepers of the West, and no doubt it will do so when the opportunity offers. The forest-reserve area is as follows (in acres): Arizona, 9,463,725; California, 21,849,171; Colorado, 15,748,772; Idaho, 20,336,427; Kansas, 97,280; Montana, 20,528,263; Nebraska, 556,072; Nevada, 1,391,999; New Mexico, 7,007,644; Oklahoma, 60,800; Oregon, 16,463,535; South Dakota, 1,263,720; Utah, 7,119,472; Washington, 12,065,500; Wyoming, 9,020,475. Total area reserved, 142,972,855. Alaska and Porto Rico also have reserves.

IRRIGATION FARMING AND NEW ALFALFA-FIELDS FOR BEE-KEEPERS.

As some of our readers are interested in the above subject we revert to it again to avoid being misunderstood. GLEANINGS has already dwelt briefly on the reclamation projects in course of construction by the United States government under the direction of the Secretary of the Interior, who will furnish particulars of any project. See GLEANINGS for May 15, p. 690. There are projects equally desirable, constructed under the Carey Act, passed by the national Congress. In this case a charge of 50 cents per acre is made by the government, and the cost of the irrigation works is added on to this. The canal and dams are constructed by a corporation which is responsible to the State, and which must sell water-rights at a price fixed by the Governor of the State, who has full powers in the matter. The maintenance of the irrigation-plant is borne by the settlers in coöperation. The conditions are, therefore, almost the same as in the case of the United States reclamation projects. The

largest projects we know of undertaken by capitalists under the Carey Act are in Idaho, Wyoming, and Oregon.

When the whole project is undertaken by a private concern the situation is quite different, for there is always a danger of the company's adding to the water-rent until it becomes excessive and burdensome. Such cases are not rare.

As a rule, farming in the arid regions is delightful work. The climate is fine, crops are abundant, and excellent in quality. Educational, religious, and social privileges are of the best.

For bee-keepers there will be many good openings within the next few years; but it will be evident, from what we have said, that it is necessary in all cases to look over the ground well before making a move; and for obvious reasons government projects should have the preference.

Some of the railroad companies advertise the government projects when the lands lie adjacent to their tracks, as the increased population brings business of a profitable nature.

The fifteenth National Irrigation Congress meets in Sacramento, Cal., Sept. 2-7, and anybody who is anxious to get posted on the subject can not do better than to study the proceedings or attend in person. The irrigation movement is one of the most important in our time, as its consequences are far-reaching and revolutionary; and it looks now as though the future typical American would be born on irrigated soil.

THE CHEMISTRY OF WAX AND NECTAR.

The Louisiana Experiment Station at Baton Rouge has recently published a bulletin (No. 91) which is of considerable interest to bee-keepers—if they understand a little of chemistry. On page 4 it alludes to cane wax in this wise: "The properties of cane wax were first studied by Avequin, an apothecary of New Orleans, over sixty years ago. He named the substance "cerosin" (from the Greek *ceros*, meaning wax), and gives the following description of its properties: 'It is yellowish, very hard, easily pulverized to a white powder, and, when molded in the form of a candle, burns like wax or spermaceti. It melts at 82 degrees Centigrade, solidifying again at 80° C. Its specific gravity is 0.961 at 10 degrees. It is odorless, unites with alkalies only with difficulty, and does not change on exposure to the air.' Avequin, by scraping, obtained more than two grams of wax from a stalk of purple cane. He also showed that an appreciable quantity of wax escaped into the juice during milling—the amount of this, however, being less than $\frac{1}{100}$ of 1 per cent of the weight of juice."

Avequin's work has been confirmed by Dumas and Lewey.

The actual amount of wax in Louisiana sugar can may be expressed thus:

Pith. . Bundles. Rind.

Fat and wax, .41 .72 .98

In Louisiana the sugar cane seldom reaches

perfection; but in tropical countries it does, and, naturally, more wax will be present in tropical sugar. Some varieties contain much more wax than others produced under identical conditions. The sugar-cane plant also contains a considerable percentage of gums, xylan, and araban, which are probably useful in wax-making, when cane juice is fed to bees.

There is a striking similarity between cane juice and flower nectar, as the analysis given in this bulletin shows, when compared with an analysis of nectar, and there is not a great deal of difference between cane juice and honey except that the former contains more water, of course.

The three principal sugars of the cane are—sucrose, dextrose, and levulose.

Sucrose ($C_{12}H_{22}O_{11}$) is the constituent for which the cane is most prized, and its physical properties are too well known to require mention. Its solutions rotate the plane of polarized light to the right, the specific rotation being +66.5. By means of inverting agents, sucrose is split up into equal parts of dextrose and levulose, hence the name of the mixture—*invert* sugar.

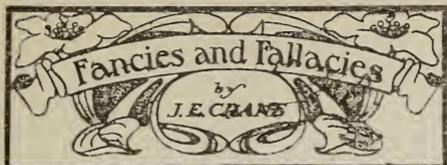
Dextrose ($C_6H_{12}O_6$), sometimes known as grape sugar, occurs in all parts of the sugar-cane. It is a white crystalline body, easily soluble in water, the solution rotating to the right—specific rotation +53.

Levulose ($C_6H_{12}O_6$), sometimes known as fructose or fruit sugar, occurs associated with dextrose in all parts of the sugar-cane. It is easily soluble in water, and much less easily crystallized than dextrose. Solutions of levulose rotate strongly to the left, the specific rotation at 20 degrees Centigrade being —89.2.

It may be stated that the cane sugar used on our tables is pure sucrose, whereas honey contains dextrose and levulose in addition to sucrose. Honey also contains rare sugars, gums, and acids, just as cane juice does, all derived from the nectar of plants exuded through the nectaries.

It will be observed that the honey-bees are far better workmen than the sugar-manufacturers, who are compelled to throw away the very best parts of the cane juice. The bee retains these unimpaired to tickle our palates. It will be noted, also, that the natural juice of sweet plants is far better for wax-making than granulated sugar, hence the experiments made in this line have been useless.

For wax-making, that tropical bee-keepers have a feed far better than we of the North possess, is evident. Those who believe the transformation of nectar into honey is effected by the saliva of bees drawn from certain glands would find this very instructive indeed, for it is evident that nothing of the kind ever happens. The spontaneous inversion of sucrose in nectar of flowers can be easily explained by the action of certain enzymes present in the fluid, which transform the sucrose into dextrose and levulose, the principal constituents of honey, so that the saliva theory fades completely out of sight.



What is the matter, Dr. Miller, with sheep in an apiary when the hives are low down? We have one yard in a sheep-pasture, and it suits us so well we would have them all so if we could, and the hives are low down too.

I wonder if the readers of GLEANINGS fully appreciate the beautiful first page of the cover of GLEANINGS during the present year. I believe too much can not be said in praise of them. I find myself enjoying these covers quite as much as the contents so full of interest beneath them.

The slogan of the saloon has long been, "You can't make men moral by law." It may have a grain of truth in it; but I notice that our new national pure-food law has a strong tendency to make men moral. Table syrups that were labeled "Pure Maple Syrup" a year ago are now labeled "Table Syrup; 50 per cent maple and 50 per cent cane-sugar syrup."

Some one inquires in a back number of GLEANINGS how to poison mice, and suggests sprinkling strychnine over flour. Strychnine is extremely bitter, and mice or rats are not fond of it. The following has proved very useful with me: Take one part flour, one part sugar, and one part arsenic; mix thoroughly, and place in hives or where the mice pass, and they will disappear very fast.

"Over-ventilation kills more bees in outdoor wintering than any one thing except starvation," writes J. E. Hand in March 15th GLEANINGS, and he is not far out of the way. I should say the smaller the entrance for winter the better provided, it is not entirely closed.

I have most of my hives fitted with a tin tube, say $\frac{1}{4}$ inch in diameter, 4 inches long, running through the outside case, packing, and brood-chamber, five or six inches above the bottom. Then I am not worried about their getting clogged. In very cold weather it fills nearly or quite full of frost, and thus automatically reduces the size of the entrance to fit the weather. If the lower entrance is entirely closed it does no harm, but may be a decided advantage. Thus fitted I sometimes do not visit a yard of bees for several months during winter.

Wm. Muth-Rasmussen inquires in the July 15th number in regard to the proper amount of brimstone to be used for killing moth-worms in brood-combs, and also for fumi-

gating comb honey. In his footnotes the editor says, "To use too little sulphur does not accomplish the object, and too much will turn the white comb surface yellow." The first statement is quite correct, but it seems to me the second is a little off color. Don't you mean it will turn the combs green? That's the way it works with me. I have not had much experience in sulphuring old wormy brood-combs, but enough to know that it takes a large amount of smoke to kill large worms in their webs. Better use the point of a sharp knife, or hang them over such hives as are not at work in sections.

In regard to white comb honey, I have sulphured during the last three years somewhere from 15,000 to 20,000 lbs., or sections, not for the purpose of killing the larvae of the wax-moth, but for the purpose of bleaching, and have had a pretty fair chance to learn something of the effect of sulphur smoke on white combs. I have my bleaching-room for this purpose, containing about 900 cubic feet. I commenced slowly and carefully, increasing the amount of sulphur burned, and the time before turning it off or changing the air of the room. I have a side door and a trap-door overhead, and can in thirty seconds drive most of the sulphur smoke out, so I can control the use of smoke perfectly. After considerable experimenting I made it a rule to burn six ounces of sulphur, and leave the room closed for eighteen minutes. Later I found some combs with little spots of green, and I reduced the amount to five ounces of sulphur and fifteen minutes' time. Still, there would be some combs a little greened, and again I reduced the amount to four ounces and twelve minutes' time. I believe that, while the above rules worked very well for bleaching, none of them was enough to kill even small larvae of the wax-moth on the combs. I know it did not kill them all.

Now the above facts are not very accurate or definite, but my work along this line has taught me some things I did not know before. One is that combs of section honey vary greatly in their susceptibility to receiving color from sulphur smoke.

The combs from some hives will take two or three times as much smoke without harm as the combs from other hives. I believe there is even more difference than this, as I do not remember ever giving such enough to affect them in the least.

Those sections where the comb is thinnest and cappings most delicate appear to be the ones most easily or quickly affected by the fumes of sulphur smoke, while the sections where the most wax is used in the construction of the comb are the last to show color when receiving an overdose of smoke. I say the *last*, but really I don't know how much you would have to give them to green them, for I have treated such to smoke over and over again without in the least affecting them.

Another thing that I believe plays a part in smoking combs (perhaps a very important part) is the amount of moisture in the air.

I have no data to give, but have come to believe that there is much less danger of greening combs when the atmosphere is dry than when more fully saturated with moisture. In other words, you can use a much larger amount of smoke in a dry atmosphere than in a damp one.

For destroying the larvae of the wax-moth on new combs I should treat them as soon as they come off the hives, or within a day or two, assured that a much smaller amount of smoke will be effective at this stage than later. A neighbor bee-keeper treats all his surplus honey in this way, and says he never is troubled with worms on his combs.

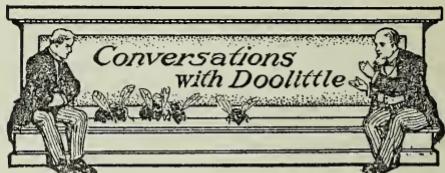
I have recently built a small room for this very purpose, containing about 200 cubic feet of space. I shall begin by burning half an ounce of sulphur, and keep close for fifteen minutes. If this does not do, I propose to use more sulphur or keep the room closed longer.

I was much interested in the two articles by A. I. and E. R. Root on the dandelion. It has seemed to me for some years that this lowly plant was not sufficiently appreciated by people in general and bee-keepers in particular. My heart is always gladdened in spring time when they throw up their great honest faces to the sun and wind and cold of May. We may not tread the streets of the New Jerusalem in this life, but we can enjoy seeing the roadsides paved with gold; and this gold does not demoralize, for most of us would just as soon see these flowers on our neighbors' lawn as on our own. Besides, they play an important part in bee-keeping. I suppose our own bees have gathered as much as two tons of honey from this source the past spring, perhaps more. Our bees were rather short of stores, and the dandelions have supplied the lack of stores, and saved us the labor of feeding, and helped build them up into vigorous colonies before clover time, all at the same time, notwithstanding the cold spring.

Have our young friends, the bee-keepers of the future, given the dandelion much thought? Have you noticed the flower-head is not one but many flowers? To support such a head there must be a strong stalk, so the stalk is cylindrical, like a goose-quill, thus giving the greatest strength for material. Have you noticed how, as one head after another blossoms, they bend down to the earth to give others a chance to lift their head so the bees can see them as they fly over the fields? As the seeds mature, the stalk lengthens until it is three times as long as when the blossoms appeared. Again, the stalk straightens up, assuming an upright position so the spring breezes may carry the seeds away to form new colonies.

If you count the stalks on each plant you will find them about twenty; and if you count the seeds on each one you will find them to number about 250. Thus each plant can furnish not far from 5000 seeds; and such seeds! If we look at them through a glass we shall find them beautifully grooved

lengthwise, and almost covered with little barbs pointing upward so that, when the seed takes its flight from the bosom of the mother-plant, the small end of the seed will point downward, and, alighting, it is able to work its way down through the grass or into the soft earth, there to produce a new plant to bless the world. Surely the Lord knew he was making a good thing when he made the dandelions; and if he has so carefully provided for all their wants, will he not provide for us who are so much higher in the scale of life?



WORKING FOR SECTION HONEY.

"Are the bees at work on basswood now? I see it is nearly in full bloom on some of the trees."

"Yes, Mr. Brown, they have been doing pretty well for the past three days."

"Isn't the bloom late this year?"

"Yes, our season is fully two weeks late with all vegetation. It is now the 23d of July, with only a few of the earliest trees in full bloom."

"Did you get much surplus honey from clover?"

"No. There are very few sections completed as yet; but if this good weather continues for a week or ten days we may secure quite a crop of section honey, though it will be impossible to have a large yield of white honey in sections for 1907."

"You say there are a very few sections completed."

"Yes. Some hives may have a dozen finished sections on them. I do not think that more than that can be found on any one hive."

"Well, that is about as my bees are, and what I wished to ask you was whether I had better take off these completed sections now or wait till all that are in one super are finished."

"That will depend somewhat on how much time you have to work with the bees."

"Well, that may be so. But will it pay me to spend time to take out the filled sections from among those partly filled and put those that have only starters in them in the place where the filled ones are taken out?"

"And, again, I must answer by saying it all depends upon how much time you have, or, perhaps better expressed, by saying it depends upon how valuable your time is during the flow of nectar from basswood. If not very valuable, then it *will* pay you to take out the completed sections from each

super once a week; but if very valuable, then I should say it would not pay."

"What do you consider *not* very valuable, and *very* valuable?"

"How do you want it expressed—in dollars and cents?"

"Yes."

"If you consider your time worth only \$1.00 a day, then I think it would pay you to take off the sections as fast as they are finished. If, on the other hand, you consider your time worth from three to four dollars a day, then I do not think it would pay you to do such 'fussing work,' as it is called."

"Wherein would it pay if my time was worth only \$1.00 per day?"

"First, in the nice appearance of the honey taken off."

"What does appearance have to do with this matter?"

"Appearance in comb honey has very much to do with the sale of it. In other words, the whiter the combs are sealed in the sections, the more money they will sell for."

"Yes; but how much extra will this appearance add to the price?"

"I used to think that it would add from one to two cents in price for each section; but of late years I have been a little doubtful in the matter."

"I see; but if it added only one cent to the price of each section I would have to take off only 100 sections each day to pay me for my time at \$1.00 a day. Is this right?"

"It would look that way."

"Well, if I could not take out more than 100 filled sections each day I should be a pretty poor stick—should not be worth \$1.00 a day to anybody. I actually believe that I could take off 300 sections a day, and at your figure this would pay me the \$3.00 a day, the amount you have allowed me for very valuable time. Is this right?"

"Perhaps so."

"Wherein else does it pay besides in appearance?"

"It is calculated that the bees will store more honey where an empty space is made by putting empty sections with starters, and especially where such sections are filled with thin foundation, than where the bees have to be crowded out as it were to a vacant space at the outside of where they have been working. In other words, the bees are believed to hustle in with greater energy to fill a vacant space made between partly filled sections in which they are at work than they will do where they are allowed to have their own way of working, or continually adding from the outside."

"How much can be gained in this way?"

"Anywhere from five to twenty sections, according to the conservativeness of the one making the estimate."

"Very well. Put it at the lowest, and we make a gain of five sections per colony during the season, do we not?"

"Yes, it looks that way."

"Then if I can go over 50 colonies a day, I shall secure 250 extra sections shall I not?"

"Yes."

"And at ten cents each this will give me \$25.00 to add to what I had from the better appearance."

"Possibly so."

"When you secured that large crop of honey some years ago, how did you work?"

"By taking out the sections each week as fast as they were completed."

"Do you practice that plan now?"

"No."

"Why?"

"Because I do not think it pays me."

"Have you ever had such a yield since you left off following the plan?"

"No. My average that year was 166 pounds to the colony, and the highest I have ever recorded since I left off the plan was 135 per colony."

"Well, then, I do not see how you figure out that it does not pay. You have an extra here of 31 sections to the colony, and this, added to the extra appearance, would give you a lot to buy your 'very valuable' time with."

"But you know of late years an offset has been figured out in these matters."

"No. What is that offset?"

"Keep more bees. And while each colony may not give quite so much honey as by the other plan, and the appearance may not be quite as nice, yet in the aggregate, when the year rolls round, the man working on the plan of keeping more bees will have more cash to jingle than will the one who is working for appearance and a larger yield from each individual colony."

"And you believed it, and so went to keeping more bees instead of working as you formerly did?"

"No. I should not like to say just that."

"But your actions admit it."

"Hardly."

"Why not?"

"They would do this, if I were as ambitious and energetic as in former years. But advancing age, together with the many infirmities accruing therefrom, compels me not only to spend less work on each individual colony, but to keep fewer colonies as well. At the present time I am more ambitious for more rest than I am for more work."

"I see. But suppose you were only 25 years old, and at liberty to adopt either plan as you chose, which one would you choose?"

"The old plan of securing the greatest yield with the nicest possible appearance would give me the greatest satisfaction, I believe, and put upon the market a class of honey which would tend toward building the section-honey industry up higher and higher than would the plan of keeping more bees."

GOV. FOLK has just appointed R. M. Washburne pure-food commissioner for that State. He has the power to appoint six food-inspectors as his assistants. In future, dealers in food supplies in Missouri will have to show just what is in the packages sold by them.



ONLY ONE ENTRANCE.

I have a friend whose veracity is so pronounced that I once heard it said that, when he said a thing was true, it was true, even if it was not true. Of course, we all feel much the same regarding such bee-keepers as Dr. Miller and Mr. Holtermann; so when they argue so strongly for more than one hive entrance to the hive we must wonder if we are correct in believing that one is best. I acknowledge that the fact that the bees are wont to close all but one is not conclusive, but it surely has weight. The instincts of the bee must be in the main right. I have often known the bees to propolize wholly the second opening.

Of course, I mean entrance, and not device for ventilation, which is not used at all by the bees, and so is no entrance at all. It may be well at times to ventilate the hive, and in this case it may be well to raise the upper story a little. I am not at all sure of this, and feel very sure that, to give the double opening in making the hive, would be a mistake. In giving the two openings there is chance for draft; and in case of severe cold, brood may be chilled and much harm done. In case of two real entrances, both used by the bees, we must upon occasion close one, and then there is likely to be loss or confusion as the bees miss the regular exit.

I believe that a single entrance, as usually made, and so arranged that it may be regulated to suit the season and size of the colony, is the best plan; and if we may judge by the style of almost all of the hives made in the country, I have many who think as I do. I take it that very few of our hives are made with two entrances. I would always plan the entrance so that it could be much enlarged in times of great heat when the bees are very numerous and hard at work. I would have an arrangement so I could slightly raise the upper story to ventilate; but as many will forget to close this, it should never be a second entrance; and for the most bee-keepers, it would better be omitted. The cautious expert bee-keeper will use such ventilation to good purpose. So I say again that I believe the best hives will have only one entrance.

APICULTURE AT WASHINGTON.

I am sure we may all rejoice in the present personnel of the Bee Division of the Department of Agriculture. I have recently visited the new heads of the Division, and am very certain that splendid work will be done. I believe more and more that in Dr. E. F.

Phillips we have a very able man, and one who has had fine training for his work. He is a man of great energy, and one who will work with his might to do the craft good. In working to combat our bee diseases, and to breed better bees, he has hit upon the very best things to push bee-keeping to a higher eminence. He now has a few bees at the Department, close by the main building, while the most are over at the farm at Arlington.

DR. G. F. WHITE.

I also had a very pleasant visit with Dr. White. We may well feel proud of the work that Dr. White has done for us. One of the greatest discoveries yet made in the real science that touches most deeply the interests of bee-keepers is made by Dr. White. He has cleared up many uncertainties that have vexed bee-keepers, and now we know what is what regarding the terrible disease of "foul brood," European "foul brood," which we may consider as the real foul brood, was the one described in Europe, and which is not the one that has been most in evidence in America. This disease works earlier, leaves many cells uncapped, leaves a looser scale at the bottom of the cell, and has not the elastic ropiness and rank odor of the disease that is most known to American bee-keepers. It is thought to be more contagious than the other, and is more likely to disappear without treatment. Yet it is a scourge, and is to be feared. The specific bacillus that produces this malady is easily cultivated on most culture media, and so can not be mistaken by the expert bacteriologist for the other, which, we will see, is very different. Cheyne's *Bacillus alvei* is the species that causes this European foul brood, and the one that has been known in America, principally in New York, as "black brood."

The other disease, American foul brood, is the one that the most of us have known in the States. This is the well-knownropy, ill-smelling, elastic, not so contagious, but more pertinacious disease, so well known to many of us in the United States. Indeed, it is the only form in many of the bee-keeping sections of our country. That this species, which Dr. White calls *Bacillus larvæ*, is quite distinct, is certain, not only from the differences suggested above, but it is much more difficult to grow, as it will not develop on most of the common cultures that are familiar to bacteriologists. Dr. White found that it did grow well on a culture medium made from crushed bee larvæ. This led him to give it its specific name. Dr. White has now some more data of great interest to give us which will soon appear in print. I saw cultures of this bacillus which were rank indeed. This work of Dr. White has been criticised by some of our writers, but it would not be were they competent workers in this field, or were they fully informed in the matter. There can be no doubt of these conclusions, and they are of great value to us. We may well rejoice that we have one so competent to work in this line, and may look

forward confidently for results in other fields, like pickled brood and bee paralysis as Dr. White gets time to investigate in these lines.

PARCELS-POST.

There is hardly any thing that would help our common people so much as a parcels post such as most European people are favored with. We now are limited to four pounds, and must pay 32 cents per pound for sealed mail, 16 for merchandise, 8 for books and magazines, and 4 for papers. Our rural service can not carry parcels, and so is carried on at a great loss. It is probable that the \$30,000,000 loss could all be saved, and a clean one hundred million more were all the plans arranged for the people rather than for the express companies. The National Grange is working for this, and the administration favors it, as it does every thing that helps the people. Let us all "cry aloud and spare not." Let the motto be, less postage, never more than 5 cts. per pound, and at least a 25-pound package. It is believed by some that a one-cent rate per pound for any package, with a limit for letters, would pay and leave no deficit, with the right management. Let us try it. I hope that we shall all talk it, and demand it of our Congressmen.



Good news from the South, Mr. Editor. Texas has a pure-food law—no longer a part of the dumping-grounds for adulterators.

Save the bits of wax and melt them up. Just so much extra profit which is going to waste in entirely too many apiaries.

Save the waste honey, and the washings from cappings, extractor, uncapping and other honey-cans, etc., and make into vinegar. Use clean rain water in the washings. This is another waste which would amount to much extra profit if saved.

The sumacs of Texas, Dr. Miller, are not very much unlike *Rhus glabra*, with their large white panicles or spikes of small flowers. This is what Mr. Chambers meant in *American Bee Journal*. The flowers are small, but there are great white plumes of them—p. 868

The higher prices of wax, and the great loss of colonies this spring, have caused a thorough sorting of combs by those bee-keepers who are up to the times. There ought to be fewer drone combs, and crooked and defective ones now, and those left behind

should be all the best to be had. In consequence of this there's been a drop in wax prices.

Combs infected with larvæ of the wax-moth are set out in the sun against some obstacle so that there are no sheltered parts under which the "worms" may hide from the sun. Then watch them "hike out," and the sun gets them, leaving the combs free of the pest. Don't leave the combs out too long or in too hot a sun or they will melt. Hundreds of combs have been "disinfected" in this way in our yards.

The end-bar projections of the shallow Hoffman extracting-frames are *not* a nuisance when uncapping, and they are most valuable in the hive for fast manipulations. A little knack in bringing the knife in and out of play when uncapping can be easily acquired, and will become so natural with the operator that the projections or spacers are *never* in the way. Twelve years of experience has taught me this, and I have uncapped combs in all kinds of frames.

Doolittle and Clark, page 889, are right. There are strains of extra-yellow bees that are hardy and hustlers. Out of a yard of 48 colonies, the 7 best ones are the yellowest in the apiary, and will average 100 pounds of both comb and extracted honey each. The best is filling its sixth thirty-pound super now. They are all daughters of one golden mother, but not entirely pure Italian, having just a sprinkle of Holy Land blood in her. It is not enough to hurt for breeding-purposes, as her daughters have all come up to her notch, and some better, as honey-gatherers, and from color and appearance they would be called pure goldens. They are a little more cross, but it's the honey I am after.

A PURE-FOOD LAW IN TEXAS.

The editor will have to quit calling the South the dumping-ground for adulterated stuff, for Texas has a pure-food law right in line with other States. This law was created by the last legislature, and conforms to the United States pure-food law. The pure-food bill is known as House Bill 5, creating a pure-food commission, with an appropriation of \$5000 a year, located at the College of Industrial Arts, Denton, Texas. The bill provides for the appointment, by the Governor, of a pure-food commissioner, with a salary of \$2000 a year; a deputy commissioner, with \$1200 a year, and a stenographer for the office at \$600 a year. The act is to prevent adulteration, fraud, and deception in the manufacture and sale of articles of food, drink, paints, and drugs. By adulteration is defined the mixing with any substance any thing which depreciates its strength and purity; the addition of a cheaper substance; the abstraction of a constituent or ingredient; selling an imitation for another article; if any is diseased, decomposed, putrid, infect-

ed, tainted, or rotten. This applies to milk, or animal or vegetable substances.

It is high time now that other States not yet having a pure-food law should get one, as they will otherwise be the sufferers from the adulterators who must "pull out" from the States having these laws. Texas is not really so far behind, after all, as many may have supposed.

AN IDEAL SHALLOW FRAME.

The shallow Hoffman (5 $\frac{1}{2}$ deep) frames have been improved "a whole lot" by making the end-bars full $\frac{1}{2}$ inch thick instead of $\frac{1}{4}$ and scant $\frac{5}{8}$ inch as before made. A thickness of $\frac{1}{8}$ inch seems to be only a very small fraction, but this addition makes a much stronger frame. Now let's improve this frame still more by making the top-bar thicker but narrower, and we shall have what I call my ideal frame. The top-bars should be only $\frac{1}{4}$ inch wide the entire length—no offsets or shoulders for the end-bars to butt against. They should be $\frac{1}{2}$ inch thick to prevent sagging. I have tried many different kinds, and prefer these to all. They give more space between top-bars, hence better for tiering up, and by far a great advantage in divisible-brood-chamber hives. There are no more burr-combs than with the wide top-bars.

In uncapping there is no frame better than with such width of top-bars and the regular $\frac{1}{2}$ -inch bottom-bars, as the knife is simply laid against the two, and the comb sliced down in one swoop. With the wide top-bars, and the frames spaced the regular distance, there is more or less trouble, as the comb does not extend beyond the wood.

No groove for inserting foundation is necessary on the top-bars, as I do not need them—especially in bulk-comb-honey production. Where the combs are cut out and foundation put in its place time and again, the groove is used only once, the first time. The groove only weakens the frame, and it is really easier to fasten the edge of the foundation on to the flat surface of the top-bar than to insert it into the groove, either when fastening with melted wax or the hot-plate-machine fastener.

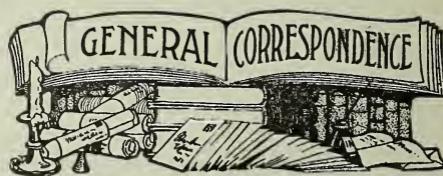
Such frames are easier and cheaper to make, I am sure, as there are fewer shoulders to cut out, no grooves, and only one plain width. What think you of such frames, and the cost of them, Mr. Editor?

ROBBING AND SOME "CURES."

One of the most provoking nuisances is a bad case of robbing; and I have seen many apiarists who, in the spur of the moment, knew not how to proceed with such cases. When I find a colony is being robbed in the apiary, an armful of hay and a bucket of water is my remedy. The hay, grass, weeds, or what may be handiest, is thrown over the entrance, loosely, so the bees, a few at a time, can pass through, and the whole—hay, hive, bees, and all—are given a good sprinkling of water.

The robbers scamper out of this mess in a hurry, and go home; and those new-comers that nose around also soon retire, for a while at least. Then the colony is exchanged for a stronger one and set on its place. This usually settles it. See cuts on next page.

When bees "go crazy" over a stack of supers or combs in hives, especially when the stacks have a leak, there is often great danger of such a demoralization that every thing on the place is stung. This is most disagreeable when living in a city, as I do. We had such a case yesterday—got started before I came home, and the women-folks had to play prisoners in their respective homes. The air was full of thousands upon thousands of bees, and half a dozen stacks of newly extracted supers were covered with a wild angry mass. The Jumbo smoker and some coal oil and a brush were resorted to in this case. The bees were smoked from the hives; and with the brush, coal oil was "painted" over the hive connections, only one stroke over each being all that was necessary. In ten minutes all was quiet—yes, the scared people wanted to know where the bees had gone to. I have used this for years most effectively.



A FEW THINGS NOT TO DO IN BEEKEEPING.

BY E. W. ALEXANDER.

[Mr. Alexander always writes valuable helpful articles, but this one on the don'ts of bee-keeping is one of his best. It should be read alike by the veteran as well as the beginner. We are not sure but that some might cut this out and paste it in their hats, where it could be seen and read often.—ED.]

While we are so free to tell the inexperienced what they should do in order to succeed, would it not be well to remind them of some things they should *not* do?

INVENTING HIVES.

First, don't spend either time nor money in trying to construct a new form of hive—not but that there are some serious faults in nearly all of our standard hives, but let the experienced bee-keeper remedy those faults.

MANAGEMENT OF WEAK COLONIES; HOW TO PREVENT ROBBING.

Don't allow your bees to acquire the habit of robbing. Hundreds of weak colonies are lost annually by this provoking habit which is frequently caused by the neglect of their owner. One of the worst features of taking our bees from their winter quarters, a few at a time, is that it almost invariably starts robbing. The colonies that are taken out

first, and have had their cleansing flight, being well located are in prime condition to attack every colony that is taken out later, and before they become located the bees from those that were taken out first have full



A BAD CASE OF ROBBING.—SEE PRECEDING PAGE.

swing at their less fortunate neighbors. In order to prevent this costly and unpleasant state of things, where you have to set out your bees at different times, first contract the entrance of every colony; then as soon as you find a colony that is being robbed, even though it is only just started, close it up and keep it so for several days; then if they have any brood, set them on top of a strong colony with a queen-excluder between. If they have no brood, and still have a queen, give them a comb containing brood from some other colony.

In putting two colonies together in this way don't disturb either of them any more than you can help, especially the stronger one. If you keep a close watch on your apiary, and treat them as above described, you can save nearly all of your weak colonies with but little trouble, and at the same time prevent your apiary from getting into that demoralized condition which they frequently do when they find several weak colonies which they can overpower with but little loss of bees.

A CAUTION AGAINST MAKING INCREASE TOO RAPIDLY.

Then the desire for more bees is almost sure to tempt the inexperienced to divide his colonies to that extent that they are almost worthless, either for surplus or to try to winter. So, don't make your increase too fast. If you do, you will not only lose your prospect of securing a fair surplus, but the chances are that you will lose many colonies during the following winter.

KEEP GOOD BEES AND PRODUCE GOOD HONEY.

Then don't be contented in keeping bees that are not good honey-gatherers. This is the principal thing we keep bees for; and if they fail to give us a good surplus when they

should, supersede their queens with queens of a good honey-gathering strain.

Then don't produce poor-looking comb honey. You have no more excuse for producing poor stuff than the dairyman has for producing poor butter; but produce a quality that you will take pride in stamping on every package of it your name and address.

SOME GOOD "DON'TS."

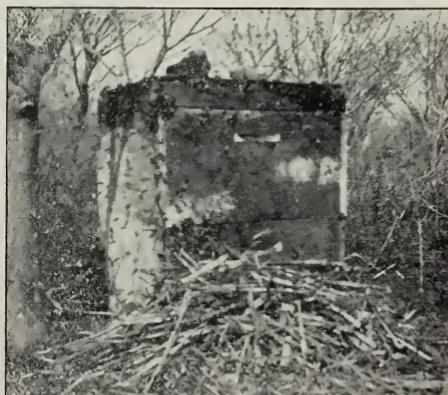
Don't set your bees in a place where they will annoy the public. Either keep them where they will not disturb any one, or sell them and go out of the business.

Don't allow drone comb in any hive except one or two, and see that these hives have choice breeding queens. There is no more profit in keeping a colony of bees where a large per cent of their combs is drone comb than there would be in keeping a poultry-yard of roosters.

Don't allow king birds, skunks, toads, and snakes to hang around your apiary. If you do they will weaken the working force of every colony.

Don't think that bees will give you good results in either increase or surplus honey if you neglect them and fail to do your part. The day is past when the word "luck" has any bearing on bee-keeping. The man who conducts his business in a careless slipshod way, taking it for granted that this and that will come out all right, is only fooling himself; and the sooner he realizes it to be a fact, the better for all concerned. So, don't try any thing of the kind, but look close to all the minor parts; and when you have united them into one fine method for practice you will be well rewarded for your study and perseverance.

Don't spend any time in worrying over the frequency of poor seasons, but spend your



A "CURE" FOR ROBBING—SCAMPERING HOME.

time in preparing your bees to make the most they can of any kind of season that comes, then you will be almost surprised to see how few poor seasons there are. We have not had a really poor season in 25 years,

while some of my neighbors complain of a poor season nearly every summer.

SECOND-HAND HONEY PACKAGES.

I almost beg of you not to buy second-hand packages to ship extracted honey in. I don't know when I ever read better advice than our friend Muth gave us a short time

to quiet down and are undisturbed during the fall months.

Don't try to winter weak colonies. If you are anxious to save all you can, then feed them syrup made from granulated sugar as soon as the harvest commences to close, so as to keep them breeding until they are strong in bees. If you attend to them in

this way they will often be your best colonies in the spring; but if you can not do this you had better unite two or more together in the fall; for a weak colony in the fall is usually a dead one in the spring.

Don't try to winter a queen the third winter. I am sure it doesn't pay. She is almost sure to die, either in the winter or early spring; and if she lives she is so slow to start brood in the spring that you will have a weak colony until mid-summer; and it will require more valuable time to build it up than three queens would cost.

Don't fail to keep your bees as warm and comfortable as is possible during the first four or five weeks after taking them from their winter quarters. We contract the entrances of all colonies to $\frac{1}{2}$ by 1 or 2 inches. In doing so it prevents robbing to quite an extent, and helps them to enlarge their brood-nest, which is very important at this season of the year. We also try to retain all the heat we can at the top of the hive. We put a piece of canvas first over the top of the frames, then a board under cover, cleated so as to form two dead-air spaces; then our outside telescope top, which is kept well painted so as to prevent any rain from entering the hive. You may think this is taking more pains than is necessary. We think it has much to do toward helping the bees to give us a nice surplus during the summer.

Don't put your bees into winter quarters that will subject them to unnatural conditions. If you do you will lose many colonies, both during the winter and spring. It is almost impossible to save a colony that has been poorly wintered. We may talk and write of the thousand and one different things connected with successful bee-keeping; but when they are all summed up the whole combined is not of as much importance as perfect wintering. We could make more money the following season from strong colonies when taken from their winter quarters if they were in nail-kegs that could be made from little weak sickly colonies in the best hive that was ever constructed.

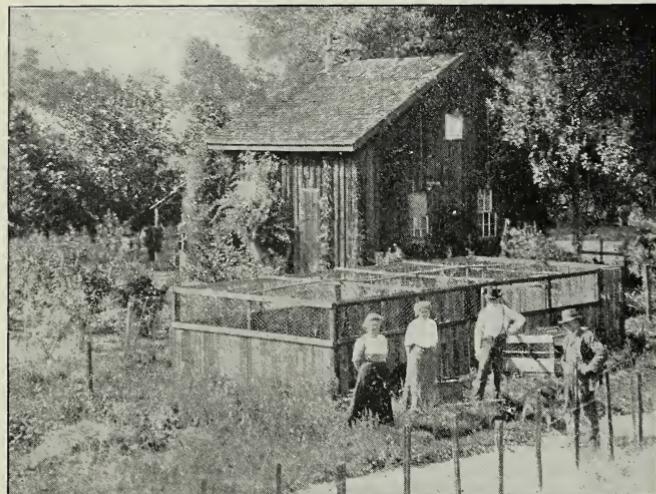


FIG. 1.—HOME OF MOSES BRAY, SANTA CLARA CO., CALIFORNIA.

ago in GLEANINGS on this subject. Don't use those poor packages. If you do, you not only bear down the market price of honey but you indirectly raise the freight rate.

Don't bother with starters of comb foundation in your breeding or extracting frames; but put in full sheets of foundation and prevent your bees from building that worst nuisance of the apiary—namely drone comb. The man with a few colonies may have time to fuss with starters; but if you have many hives to care for, the sooner you cut out this starter business, and the shifting around the apiary of brood, the better it will be for your net income. The earlier in the spring you can have every hive in your apiary, and every comb in those hives filled with worker brood, then keep them so to the end of the season, the less reason you will have to worry about poor honey seasons and overstocking. We have never had a strong colony of bees backed up with a hive full of worker brood fail to give us a good surplus.

PREPARING FOR WINTER.

Don't neglect to prepare your bees early in the season for winter. This part of the business should here at the north be all finished before September 10. To a certain extent we are preparing our bees all summer for the next season; then when the final finish comes, the last of August, we have but little to do, and I am sure that they will winter with less loss if they have a chance

I will close by saying, before I run off on the subject of wintering, that close attention to all things connected with your bees is the magic word that unlocks the door to success in bee-keeping.

Delanson, N. Y.

BEE-KEEPING IN CALIFORNIA.

A Visit to the Apiary of Moses M. Bray.

BY W. A. PRYAL.

It was during a day late in October that I visited Mr. Moses Bray, an old-time bee-keeper in Santa Clara Co., this State. The hillsides in the canyons were well wooded, and, in a fair season, the honey-yield, I was told, is very fair through these canyons and ravines on the land side of the mountains. Off toward the Pacific, or water side, the honey secretion is not so good, owing mostly to the cooler condition of the atmosphere.

Mr. Bray is a very fine old gentleman, and has lived in these mountains for nearly forty years—see Fig. 1. Twenty-six years ago he was a cripple, rheumatism having got such a hold of him that he could hardly walk. At that time he had a colony of bees in a cracker-box.

FEROCIOUS BEES.

Crippled and all as he was, he went bee hunting and soon had twenty-four colonies captured from bee-trees. He states that they were the worst-behaved bees he ever "ran up against," and at one time the number of stings he received seemed to be nearly a thousand.

RHEUMATISM VS.

BEE-STINGS.

Therein lay the cure for the malady that had so long crippled him. The rheumatism was routed by the poison from the stings, and the ex-patient vowed then and there that he would stay with the bees.

AN IDEAL APIARY SITE.

At the time of my visit Mr. Bray's aver-

age number of colonies has been about one hundred, and the yield a little over one hundred pounds per colony, with some extracted honey also. His apiary is on the crest of a hill, not far from the residence—Fig. 2. This location is ideal in many ways, especially as it takes the bees away from the roadway below; and it gives the hives an early exposure to the first rays of the rising sun. Then an extracting-house could be placed so that all the hives could be run to it by gravity, thereby saving heavy loads in handling and lifting. Then the honey could be run to the honey-house below by means of a pipe. The hives, too, would get the last rays of the sun, all of which would be better than if the colonies were in the valley. Against this scheme is the one that, during windy periods (which are very seldom), the bees would find it hard winging their way to their respective hives.

BRAY'S REVERSIBLE FRAME.

Mr. Bray is something of a genius. He shows a number of handy implements of his designing. Some two years ago he conceived a spring attachment for end-bars, which also makes it easy to make a frame a reversible one. Fig. 3 will probably make the device easily understood. A piece of sheet iron is bent in the shape of an L. A hole is bored near one end, and a slot parallel to the edges of the strip is made near the other end of the top-bar. Into the frame small staples are driven equi-distant from the screw, so that, no matter which way the iron



FIG. 2.—A PART OF MOSES BRAY'S APIARY, 100 FEET ABOVE THE CREEK BELOW.

hanger is turned, up or down the frame, the slot will slip over a staple. The latter also serves to space the frame from the ends of the hive. At diagonal corners on the sides of the frame are more small staples for comb-spacers. The hive shown in the half-tone is a special queen-rearing hive of Mr. Bray's designing. His manner of wiring is somewhat novel, although, perhaps, not new. While I was posing Mr. Bray for a picture of himself and bee-yard, the genial Pat Keating

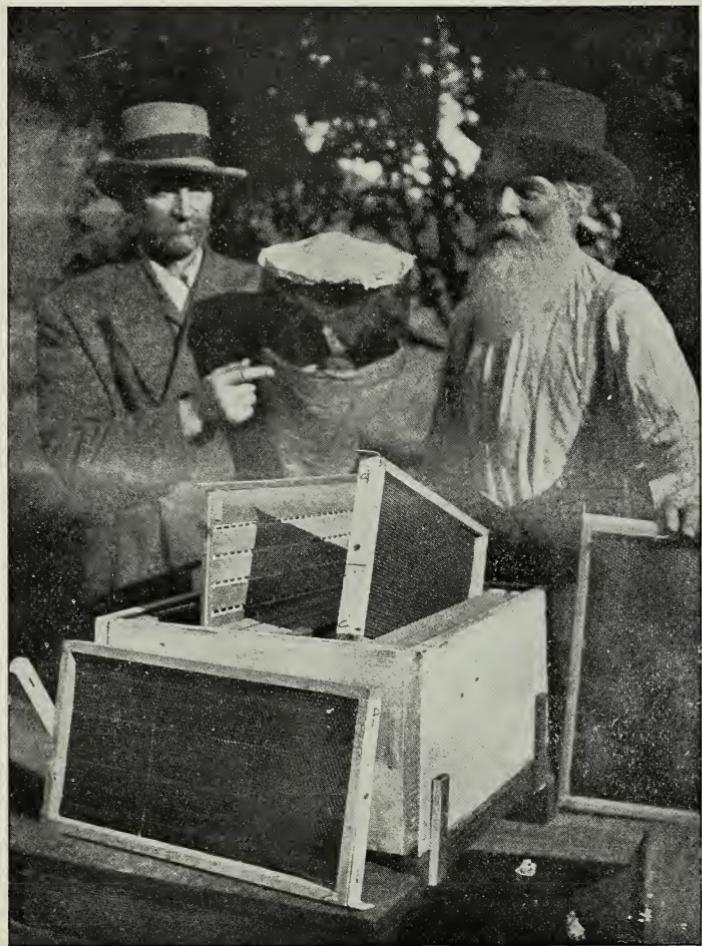


FIG. 3.—PATRICK KEATING AND MOSES BRAY SHOWING NEW PLAN FOR REVERSING HANGING FRAMES.

stepped upon the scene, as he wanted to show Mr. Bray (and others too, I suppose) some of the good features of his bee-veil.

Oakland, Cal.

[The manner of reversing the frame invented by Mr. Bray greatly resembles the Heddon reversible frame of the eighties, and now discarded. Such a frame is considered too expensive by the average buyer of hives.
—ED.]

THE BEES OF THE CARNIC ALPS.

The Curious Hives Used by the Natives; Carniolan Bees.

BY RALPH BENTON, B. S.

Assistant in Entomology, University of California.

The peasants of the Austrian and Carnic Alps are extensive bee-keepers. They have a rare race of bees; and, though a simple and agriculturally primitive people, have done much to take advantage of their stock in trade. Winding in among the Carnic Alps is the broad and shallow yet swift-running Save River with its turbulent mountain tributaries rushing on to meet the slow-moving, sluggish Danube threading its way through the plains of Hungary. The people who inhabit these narrow valleys among the rocky spurs are Slovenians, and cling tenaciously to their language and national customs against the encroachments of German Austria. Their system of bee-keeping is peculiarly their own.

The hives are made of thin material, about three feet in length, six inches in depth, and perhaps fifteen inches in breadth. The bottom-board is but loosely secured by four iron nails, or in some cases screws, and projects in front two or three inches to form the alighting-board. The fronts of the hives alone are movable, and are temporarily secured by in-

serting the top edge close under the slightly projecting top-board, and then wedging in by pushing in snugly along the bottom-board. The front pieces contain the entrance three to four inches long. On these fronts are usually painted scenes illustrative of some well-known proverb or a cardinal event in Biblical history, as shown in the illustration. The hives are placed one above the other in rows of ten or a dozen, or even

longer rows—a hundred or two hundred colonies thus occupying a single shed, the depth of the hives' length, with open front. The fronts of the hives thus painted form a striking front to the shed. The writer has traced Bible history from the Creation down to the Acts of the Apostles, depicted on the fronts forming the side of a single shed.

Hives so constructed lend themselves easily to transportation. With a bit of evergreen stuffed in the entrance just at nightfall the bee-keeper can load as many as a hundred colonies on a single wagon; and when well on the road the evergreens are removed and the bees allowed to cluster on the outside for better ventilation.

Carniola is the home of migratory bee-keeping, and each year late in the summer the bee-keepers of the upper valley move



ELABORATE DESIGNS ON THE FRONTS OF OLD CARNIOLAN BEE-HIVES.

down to the broad buckwheat-fields of the lower valley. "In die Heide" is a well-known expression, and there they are—numbering thousands of colonies rowed out to harvest the great crop of honey from the acres of buckwheat.

On a certain day the bee-keepers all assemble, and barter and sell their crops of honey and their bees; and on this day colonies numbering into the thousands are sulphured and the honey-combs cut and thrown into great tubs to be jammed and strained. Of late years, since this race of gentle bees has become world-famed, and the value of their bees known, this wholesale slaughter has been largely abandoned, and now the honey is cut from the rear of the hives and

the colonies united for the winter. Travel by rail is now largely supplanting the old wagon transportation, and the great ceremonial days of old are fast passing away.

The Carniolan bees are now quite well known in this country, and their excellent qualities fully demonstrated. They are very gentle, good honey-gatherers, somewhat larger than blacks or Italians, and strong vigorous flyers. Very prolific, coupled with the quality of extreme quietness, they are most excellent winterers; and, gathering a minimum of propolis, are particularly well adapted to comb-honey production. They are, in the main, well marked with steel or dusty gray bands with the queens varying from a light brown to a deep bronze. The drones are the largest of any race of honey-bees. Combining all these qualities it is not surprising that bee-keeping is such an important and successful industry in this little Austrian province.

The adjoining province to the north, Kärntner, has also many bee-keepers, and the bees are about of the same type—if any thing showing even a less tendency to yellow than toward the Italian border.

Some of the more educated people who know German have tried to introduce the Berlepsch hive from Germany, but with not much success—so conservative are these independent mountaineers. Many carry on a successful queen-trade with France, Switzerland, and Germany—some even sending queens and nuclei to Holland and England. A great exchange of nuclei goes on in the absence of the perfection of sending queens by mail. Queens in most instances are reared naturally in full colonies, and fertilized perhaps in nuclei in the full-sized hives—after-swarms being largely so utilized.

WHITEWOOD FOR HIVES.

Some Arguments in its Favor.

BY F. GREINER.

In my former communication I omitted to comment on what I found in the A B C of Bee Culture with reference to whitewood lumber. It is stated that this lumber shrinks endwise, and that it is, for that reason, unsuitable for hives. Science may say lumber shrinks endwise. When a very delicate measuring instrument, a sort of micrometer, is used, a stick of timber or a board of whitewood may be found to have lost an infinitesimally small fraction of $\frac{1}{16}$ inch; but for practical purposes whitewood shrinks no more than other kinds of timber, or about as near nothing, so far as it can be detected. Whitewood has been used in these parts of New York in barn-building, mixed in with other timbers, and no perceptible shrinkage has ever been noticed. Houses have been sided with it, and late years bee-hives have been made from it, and it serves the purpose, not as well as soft white pine, for there is probably no better timber growing anywhere than this; but it can be or it may be used

without any complication arising, such as is mentioned.

Whitewood is a much stronger and somewhat harder wood than pine. It does not nail as easily, but nails hold better in it, and therefore end-pieces of wide frames and section-holders can be made to advantage from it. If cement-coated nails of proper size and fair length are used, a whitewood frame will never give out. The bottom of a heavy shipping case will never come cants if the head pieces are whitewood.

Some whitewood is very hard and splits easily. When nailing through it, ought not to be very large or the resulting work will be bad; but I have had pine (cut in low land) which behaved even worse than the hardest kind of whitewood in that respect.

Whitewood has greater strength when warping, and it is difficult to draw a wide

lent material for bee-hives. Under present conditions whitewood of a uniform grade is not as easily obtained in large quantities for the bee-hive factories as white pine. It is harder to work, and more difficult to nail, although it holds a nail better than a softer wood. While it is no cheaper, yet at the same price we doubt if the bee-keeping fraternity would accept it in place of white pine.—ED.]

THE SELECTION OF A BREEDING-QUEEN.

On What Basis Shall the Choice be Made? the Importance of Getting Rid of the Poorest Colonies in a Breeding-apriary.

BY C. F. BENDER.

Mr. Holtermann's article on page 413 of the May 15th issue is a very clear statement of what we ought to know about our bees, and don't; but I rather doubt such knowledge being of very great use in the practical breeding of bees, even if we possessed it. I should like very much to know which of my queens produce the longest-lived workers, which bees would fly the furthest, live on the smallest rations, resist unfavorable weather the best, carry the largest loads, or make the most trips. But even if I knew all these things I might yet be a little puzzled to know which queen to breed from if I had nothing else to judge by.

If we turn our attention to practical results, instead of looking for the cause of those results, the decision is much easier. We want the bees that will store the largest quantity of the most marketable honey, and they must be gentle enough so that we can handle them. Those are the requirements in a nutshell.

To take a case from my own practice:

The season last year was nearly a failure, but I had one colony that produced honey to the value of \$11.00, besides their own stores. The next best gave a net return of \$6.00; several others of \$5.00, or nearly that. It would be interesting to know what combination of qualities caused those bees to go so far above the average, but such knowledge would probably make no difference in the selection of a breeding-queen. As it happened, all the best colonies were gentle, and all were pure Italians, and so were more likely than hybrids to hold those qualities in the next generation. Other things being equal, of course the colony storing the greatest amount of honey would be chosen. But the best colony produced watery cappings, so that was not suitable for comb honey.



EXTRACTING IN THE TROPICS, ALL OUT OF DOORS,
TRINIDAD, B. W. I.

badly warped board straight without checking the board. I consider this the worst feature of this timber when it comes to hive-making. The boards which come out of the center of the log work pretty well; but those from the outside had better be cut into something narrow.

Naples, N. Y.

[Whitewood is, perhaps, the next best substitute for white pine for hives and framework, unless we except redwood, which is not obtainable, except at a prohibitive price, in the Eastern States. A large number of bee-keepers do not paint their hives, and for all such the white pine is obviously better. Cypress will stand the weather without paint better than any other wood and is an excel-

The point I am aiming at is this: That, while the qualities enumerated by Mr. Holtermann are important, they are important only as they affect the honey crop. And of the honey produced we have a ready means of judging.

In regard to controlling the drone parentage, I think the best we can do is to follow Dr. Miller's plan. If one has more than one apiary, keep all the best colonies at the home yard—that is, those that gave the best records the previous season. Then do all the queen-rearing at the home apiary, and let the drone question take care of itself. Where we have a hundred colonies in one place, the mating with drones from other sources will not ex-

ceed five per cent. If we are to make any improvement in our stock, it is quite as important to weed out the poorest as it is to breed from the best.

Newman, Ill.



YOUNG QUEEN-BREEDER THOMSON MAKING NUCLEI.

ceed five per cent. If we are to make any improvement in our stock, it is quite as important to weed out the poorest as it is to breed from the best.

Newman, Ill.

A SEVEN-YEAR-OLD BEE-KEEPER WHO RAISES QUEENS.

BY W. K. MORRISON.

The little boy shown in the two illustrations is John Thomson, of Couva, Trinidad, an island on the coast of South America. His father is a Presbyterian missionary from Canada, also his grandfather on the maternal

side. Missionaries are expected to teach almost every thing, and Mr. Thomson set about learning bee-keeping that he in turn might be able to instruct the East Indians among whom he labored. It did not take him long to master the elements of the business in Trinidad, where bees may be handled near every day in the year. Among his most scholars was his own little son, who speedily mastered the details sufficiently well to be able to raise queens for sale on his own account.

It is this young bee-keeper is an expert in the shallow hive, which is admirably suited to his strength, and, moreover, answers all the requirements of a tropi-

cal bee-hive. He not only does not use a veil, but, as may be observed from the picture, does not use shoes to protect his feet. The bees he has are pure-bred Italians. There is, of course, an occasional hybrid colony, and one of these produced \$24 worth of honey, sold at only fairly low prices. He gets \$1.20 for pure-bred queens. His father is away so much looking after out-missions that the burden of the apiary falls on this boy. One day when all were absent he took down a very large swarm and successfully hived it, just as he appears in the illustration, barefooted and barefaced.

Fifteen of the East Indians have small apiaries fitted out with these hives and the lat-

est devices, which goes to show what can be done for that race. They are a very bright, studious race of people, and readily take to bee-keeping when some one offers to instruct them how to do it.

When Johnny Thomson gets back to Canada we naturally expect he will go to work to teach the natives of our Lady of the Snows the latest kinks in twentieth-century bee-breeding. In any event we expect to hear more about him in the years that are to come.

A SEASON'S WORK WITH SECTIONAL HIVES.

Swarm Control and Comb-honey Production; Feeding Back and Feeders.

BY J. E. HAND.

[The problem of feeding back has been considered a difficult one. Many, in attempting it, have failed; others have partially succeeded. A few, and a very few, have made a grand success of it. Among this minority may be named our correspondent, Mr. Hand. He has gone so minutely into the subject that there should be no reason why any one should fail. In the previous article he explained that, while the honey-flow was on, he ran his colonies up to the point of capping the sections when he took them off. These he held till after the honey-flow had ceased, when he put them on the hive again, and fed back thinned-down extracted honey to get them capped over. In this article he explains fully this last procedure.—ED.]

Judging by the reports that have appeared in the bee-journals from time to time it would seem that very little is really known regarding the science of feeding back to finish off fancy honey. Some of the statements from those who have made a failure of feeding back are really amusing. One bee-keeper conducted some extensive experiments along this line; and, basing his judgment on the result of these experiments, he offered to pay \$1.00 per lb. for 100 lbs. of comb honey that could be produced at a profit by feeding back extracted honey. On further inquiry regarding these experiments, we found that they were conducted during October, after every thing green was killed by the frost, and at a time when the bees were in a semi-dormant condition, and had settled down for their winter's rest, and therefore were entirely unfit for such an experiment. This party also caged the queen. While it would, no doubt, be perfectly safe to offer even \$10.00 per lb. for honey that could be produced at a profit under the above conditions, yet it should be evident to even a novice in bee-keeping that such an experiment does not amount to any thing, and that judgment based on the result of such work would be far from correct. It is folly for any one to make the statement that comb honey can not be finished off at a profit by feeding back extracted honey, with the difference in price that exists at the present time between comb and extracted honey.

Just now people are going wild about the great profits to be made in feeding hens for winter eggs; and, while there is a handsome profit in winter-egg production for the poultryman who is master of his business, yet the

profits are not greater than can be obtained by feeding bees to finish off partly filled sections. I speak from the standpoint of the poultryman as well as that of the honey-producer. Feeding back is somewhat similar to feeding poultry for winter eggs; and unless you possess the "know how" you will, no doubt, come out at the little end of the horn as did Bro. McGlade with his poultry venture.

The object of this article is to tell you just how we are not only able to feed back at a handsome profit but also how we get our sections more perfectly and evenly filled than it is possible for us to get in any other way during our very short honey-flow.

WHAT KIND OF FEEDER SHALL WE USE FOR FEEDING BACK?

Perhaps the first thing to be considered in feeding back is the feeder. For several years we were handicapped in our operations because none of the feeders that were listed in any of the supply catalogs were of any account for the purpose, so we invented several of our own; and, although some of them were an improvement over the others, yet they were not entirely satisfactory.

Finally we found a feeder illustrated in "Quinby's Bee-keeping Explained" that was just what we wanted; and, although we have used it for more than ten years, we have not been able to improve it, and we are using it to-day just as Mr. Quinby did more than fifty years ago. Fig. 1 will show how it is used.

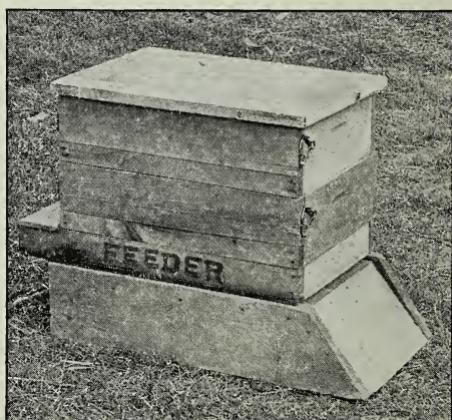


FIG. 1.—THE QUINBY FEEDER AS USED BY J. E. HAND FOR FEEDING BACK EXTRACTED HONEY.

The feeder is a tin tray two inches deep, inclosed by a wooden frame of the same depth. The wooden frame is of the same width as the hive, and $2\frac{1}{2}$ inches longer, while the tin tray is the same length as the hive. This tray is pushed to the back end of the frame surrounding it, leaving a space of $2\frac{1}{2}$ inches in front for the bees to pass out and in the hive, and at the same time allows the tin tray to project beyond the hive at the

back end for filling the feeders, see Fig. 2. There is also a framework of slats, lengthwise of the feeder, and of the same depth, standing on edge about $\frac{1}{4}$ inch apart, for the bees to travel over while working in the feeders, so that no bees will be drowned. The

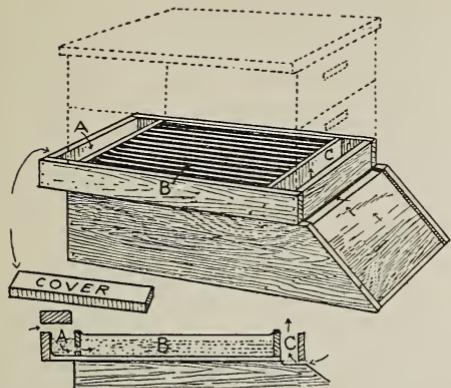


FIG. 2.—DETAILS OF CONSTRUCTION OF THE QUINBY FEEDER AS USED BY J. E. HAND.

feeder rests square on the bottom-board, and the hive rests square on the feeder except the $2\frac{1}{4}$ inches at the back end, which is covered by a little board. The bees can not get into the place where the feed is poured in, and the feed flows evenly under all parts of the hive, where it will be quickly taken up by the bees.

This feeder will hold six quarts; and after using it quite extensively for feeding back we do not hesitate to pronounce it by far the best one that has yet come to our notice, and we doubt if it can be improved.

A PROLIFIC QUEEN NECESSARY TO SUCCESS IN FEEDING BACK.

Next to the feeder, perhaps our success or failure depends upon the queen more than on any other one thing. Indeed, we are not sure but that more depends upon the queen than upon the feeder; for we have never been able to make a success in feeding back with a colony having a poor worn-out queen, even with the best of feeders; while we have had fair success with a good queen and a poor feeder.

We have stated elsewhere in these articles, and we repeat it here, that bees will not do satisfactory work in sections over a brood-chamber crowded with honey. The queen must be able to hold her own against any amount of heavy feeding. This is why we prefer a *young* queen. We have had queens that would hold our shallow brood-sections against heavy feeding for six weeks, and finish hundreds of sections without allowing the brood-chamber to become crowded with honey, simply because it was kept full of

brood. A colony having such a queen will always give good results in feeding back. By selecting the queens for breeders that produce bees that cap their honey the whitest, we have been able to improve our bees greatly in this respect. We breed for quality, and would use a black queen for a breeder if she possessed the necessary qualities. Color cuts no figure with us. Handsome is that handsome does is our motto in selecting a breeding-queen.

A CONTRACTED BROOD CHAMBER FOR FEEDING BACK.

Having decided upon our feeder and queen the next thing to be considered is the hive. It is necessary to resort to extreme contraction of the brood-chamber in feeding back; for unless the brood-chamber is small the queen will not be able to keep it filled with brood; hence we would have our feed stored in the brood-chamber instead of in the sections. We use one section of our brood-chamber, which is of about the capacity of four L. frames, and spreads the brood out evenly under all parts of the super. It is true that we can use a full-depth frame, and contract by means of dummies; however, we have not been able to get satisfactory work done in sections over dummies, and our time is too fully occupied to permit of handling them. We have found that an eight-frame brood-section five inches deep will give best results in feeding back; and as our sections are nearly full of honey, no queen-excluder is used. If there were very much pollen being gathered at the time we were feeding back, we would use two brood-sections and two queens. We have had good success in feeding back in this way. However, we seldom have any trouble from pollen.

Another very important factor to be considered in finishing off sections over a feeder is the brood-combs, for the bees have a habit of incorporating bits of wax from the brood-combs into the cappings of the sections; and if the combs are old and black, our sections will look dirty and soiled or travel-stained, which would bar our product from the fancy grade; hence we *must* have *new white* combs in our brood-section. It is also very desirable to have as many young bees as possible in our feeding colonies, for young bees are considered best for comb-building. Having our shallow brood-section of white brood-combs, and a strong force of mostly young bees with a vigorous young queen, and a feeder holding six quarts of feed, and that will spread out the feed evenly under all parts of the hive, we may proceed to finish off our partly filled sections with every assurance of success.

We have described our method of feeding back at considerable length for the purpose of impressing upon the minds of those who would make a success along this line the necessity of *starting* right, and then using the same judgment and common sense that are essential to success along other industrial lines.

A FEW DON'TS.

Don't attempt to feed back with a caged queen. Don't wait until September, but begin just as soon as the honey harvest is over, and before the bees have quit comb-building. Don't neglect the smallest detail of your business, for feeding back is made up of small details, and our success will depend upon just how well we attend to them. Don't feed during the honey-flow, for it keeps the bees from going to the fields, where they might get as much as they would from the feeders; and it doesn't cost any thing; and, above all, don't expect to get something from nothing; therefore don't be afraid to feed, for judicious feeding is the key to successful comb-honey production in *my* location and it *may* be in *yours*.

Having all the elements necessary to perfect success in feeding back we will push our operations as fast as possible while the weather is favorable and our bees are still secreting wax nicely. So just before dark, and after the bees have quit flying, we will fill our 50 feeders, putting in each feeder from four to six quarts of honey made thin by adding water. We have found that it is better to feed two days and skip two. This gives the bees a chance to move the honey from the brood-combs up into the sections to make room for the queen to lay eggs. In heavy feeding, every available cell in the brood-chamber will be filled with honey until the feeder is empty, when the honey will be moved into the sections as fast as the combs are drawn out. If any of the sections are partially capped, the caps should be shaved off or else the sections will be rough and uneven when finished. As it is not desirable to have more than two supers of sections on our feeding colonies at one time we will remove the two top supers, using the bee-escape board. Our object in placing all the supers on the feeding colonies at first was to get into our feeding colonies the bees that were building combs. This is important. When the sections in the super next to the brood-chamber are nearly capped it is raised up, and the top one is placed next to the brood-chamber. As soon as the top one is finished and capped solid to the wood it is removed, and another super of partly filled sections is placed next to the brood-chamber until all our partly filled sections are finished and ready for market, where it will go just as fast as we can grade and pack it, for our honey is usually sold before it is finished, and our customers are pushing us to send forward their shipments, so we will begin at once to grade and pack our honey for shipment. However, before we remove the last super of sections we will, with our hive-lifter, swing up the hives of our feeding colonies and remove the feeders, placing on each bottom-board, in place of the feeders, a brood-section taken from the piles that we tiered up seven or eight high for this purpose. This gives these fifty feeding colonies their full quota of brood-combs.

To be continued.

THE HONEY-FLOW.

The Value of Knowing the Local Conditions; Putting on and Taking Off Supers; Full Sheets of Extra Thin Foundation Recommended for Sections; Some Seasonable Suggestions to Beginners.

BY E. D. TOWNSEND.

There are some bee-keepers who do not seem to know that there is a period during which the great share of the surplus honey is gathered. In the northern States there may be two such periods; but most of the locations in those States have only one main flow, and this from white clover, although in some places this is followed by a basswood flow. The period of white honey varies from a very short flow in a poor year to one extending over as much as six weeks in an extra good year.

The time of the commencement and ending of the season is also a little uncertain. In some seasons clover begins to bloom the first of June, and produces honey a week or ten days later; then in other seasons it does not produce honey before the 20th of June. We figure that a late season means a short one, and our guess has usually been about right, along these lines.

The basswood is even more uncertain as to the time of bloom and duration of the honey-flow. It blossoms with us as early as the 1st of July in some years, and as late as the 10th in others; but an average date is from the 4th to the 7th. About this time clover is through yielding; and so, usually, the basswood laps on and makes a continuous flow of white honey until the season closes, which is rarely later than July 15. Where there is no basswood the flow from clover usually ends about July 8, and the novice can figure on his crop of white comb honey being ready to remove from the hives about the middle of July.

These calculations are based on the supposition that there is to be an ordinary flow of honey. Of course, there are seasons of failure and seasons like the last, where only half a crop was harvested; and, once in a while, an extra good season when the flow may be somewhat longer than usual.

It is of vital importance to know the location well, so as to be able to tell very nearly when to expect the main surplus flow to begin and to close, for in no other way can comb honey be produced intelligently. If the beginner does not know his location it would be well to visit and "pump" some old "vet" in the business.

PUTTING ON THE SUPERS.

A very good rule is to put on the sections when the first bees are seen on clover; then when they have worked three, or, perhaps, four weeks they can not be expected to work much more. In a basswood location, if the trees should appear full of blossoms, and the weather is suitable for the bees to gather honey, the honey-flow may be lengthened out a few days. With favorable conditions bass-

wood is the freest yelder we have in Michigan; but since it happens that these conditions are rarely right we do not put much dependence on basswood, especially as it is being cut so fast for lumber.

I use, and advise that beginners use, full sheets of extra thin foundation in the sections, and I think that these sections should be built between separators. To do this it is absolutely necessary to know the location in order to tell when the main flow begins, and thus get the sections on at this time.

When the season is over—that is, a week after the flow stops—and the bees are through capping their white honey, every super should be removed from the hive, no matter whether full or not. If there is a fall flow, the supers should be put on again when this commences, but not before. Many leave their partly filled supers (left over from the white honey-flow) on the hive during the dearth of honey between the white-honey flow and the buckwheat flow. During this time the bees tear out a great share of the unused foundation in the sections. This is the worst time of the year for the bees to propolize, and this and the mutilated foundation leave the sections in any thing but a desirable condition for the buckwheat flow.

This is the kind of honey we have to compete against when we ship our honey to market. If only the people who produce this stuff were hurt there would be less reason to complain; but every one who produces honey for sale is affected; one has only to look at the honey quotations to see how things are going, for the quotations usually read, "Market overstocked with low-grade honey."

I have told you heretofore that bees would bring up honey from below, and cap and finish sections for a week after the honey has ceased coming in from the field. Taking advantage of this fact we leave our comb honey on the hive until the end of this period. If this is the end of the first (or white) honey-flow, escape-boards are put in under every super in the yard; and when free from bees the supers are removed to the honey-house, and sorted. Those that are fit for the market are cased up, and the rest either "fed back" to be finished or the honey extracted. In the latter case these partly filled sections can be used for baits for the fall flow if there is a fall flow; if not, they are stored away until the next season, when they are used.

I hate to be compelled to record the fact that three-fourths of the comb honey producers practice the slovenly way of leaving their comb-honey supers on the hive clear through the season—that is, those partly filled supers at the end of the white-honey flow are left on the hive to be finished up with buckwheat honey. This makes a bad mess. The white-honey part of the section will be travel-stained, and covered with propolis. Then sections containing two kinds of honey are never satisfactory. This practice is especially undesirable when there is an interval of three or four weeks between flows, as with the light and dark honey-flows in the northern States.

It is necessary that the comb-honey producer should have an extractor. It need not be so elaborate an affair as the extracted-honey producer would require; but, nevertheless, good comb honey can not be produced without one. Each kind of honey should be produced by itself as much as possible. The bees should never be allowed to commence a certain honey-flow unless all the honey of a previous flow has been extracted from the sections so they can commence anew and do good work. It is impossible for the bees to fix over an old job and make a satisfactory new one.

There is plenty of missionary work for the bee-journals along this line. As the season advances, this class of bee-keepers should be told, step by step, how the season is progressing, whether the clover is early or late in maturing, and when it will probably begin to produce honey in the different locations; then when the indications are that the season will close, the most important part of all is to impress upon the readers the necessity of taking off comb honey at the proper time.

If this class of bee-keepers would only eat all the dirty honey they produce there would be no particular occasion for writing on this subject, for then they would hurt no one's business but their own; but this is not the case, for no one can deny that such honey finds its way on the market.

Remus, Mich.

DEEP HIVES VS. SECTIONAL HIVES.

A Reply to Mr. Dadant's Article.

BY J. E. CHAMBERS.

Mr. Editor:—I note on p. 485 Mr. Dadant's reply to my article, p. 181. He has acknowledged most of the points of superiority in favor of sectional hives; but I should like to take exception again to some of his arguments.

First, Mr. Dadant says that it seems from my article "that the shallow hive is of such great advantage that it is forcing the manufacturers to handle it in spite of themselves." Just so, Mr. D., but not in the sense you have implied. These manufacturers are business men who do not handle goods from a purely philanthropic motive, but for the dollars that are in them. If there are dollars to be gotten, most of them are willing to let their pre-conceived notions and even their prejudices slide a little to one side, and they supply the goods that are called for.

Second, Mr. Dadant goes on to relate the experience of Mr. Heddon in trying to introduce his shallow hive, or, rather, divisible-brood-chamber hive. Granted that all this is fact, does it prove any thing? I think not, for I know of many good things that have never been taken hold of by the crowd. But I deny that Mr. Heddon ever made one-tenth the effort to put his hive before the public

that the so-called standard-goods crowd have made to keep theirs at the front. In proof of this I refer any one to the back numbers of bee-journals and catalogs issued by these firms during the past several years.

Third, Mr. Dadant says that, if he judges by the amount of foundation made for the shallow hives, there are but few of them in use. Now, if I judge by the same standard, I can say that there are no Dadant hives in use, save those that Mr. D. himself uses, for I know of very few who make much of that special size of foundation. However, I do not think such an argument at all valid, for the reason that I know of many shallow-hive users who split standard sheets in two and make two nice full sheets for this size of frames; in fact, I have always used foundation in this way. Besides, I am sure there are quite a few who use home-made foundation.

Fourth, Mr. Dadant admits that the shallow hive is easier to handle and transport than the deep one; but he says he does not move hives—would as soon think of moving a house as a hive. This would be all right for you, Mr. D., but all wrong for most of us. I have always regarded mobility as a very valuable point in favor of any hive, and that conviction has been a good deal strengthened by studying the many mechanical devices for lifting and handling heavy hives that have lately been shown in the bee-journals, and whole apiaries are moved now and then.

Fifth, Mr. Dadant admits that foundation is easier put in frames of the shallow kind, but says he puts in foundation but once in 30 years. This is true in his case; but there are many, especially in the South, who cut out honey in chunks to sell as bulk comb honey. How about these? Besides, combs often must be cut out for various reasons. But granted that a man needs to do a thing but once in life, is that any reason for making it as hard as possible to perform?

Sixth, Mr. Dadant does not relish the idea of shaking out an entire colony in order to find the queen. Neither do I; but I seldom need to find a queen in order to know whether or not she is failing; and when I want to supersede one I never go to the trouble to hunt her up. I have a better way of doing it. But no one would need to shake out all the bees in a hive in order to find a queen. When I need to find one, which is not often, I can do it quite as quickly as can the deep-hive advocates.

Seventh, Mr. Dadant does not like the idea of helping a weak colony by giving a full story of brood and honey from a strong one. He prefers a more gradual help. Let us compare methods, and then leave it to the intelligent unbiased mind to decide which is easier and better. Mr. D. gives a full comb of brood to a colony already too weak to cover and protect what their own queen can produce. Result, they contract into a still more compact cluster, and egg-laying is stopped for a time at least; neither do any field-bees fly out on cold days to gather new honey and

pollen. With my method I leave all weak stocks alone just as they come through the winter, only seeing that they have plenty of stores; and as soon as settled warm weather comes, and my best colonies are fixing to swarm, I select four or five frames of hatching brood with some empty combs, and place over these weak ones. Thus I make them all up to a standard strength; for by this time, all unaided, these weaklings have reached a fair degree of strength, and the brood given at once put them into honey-gathering condition, and at one operation, without the risk of chilling any brood or wasting any undue amount of time; and the strong colonies never miss the bit of brood taken from them. In fact, it is a help to them, for it keeps back swarming until the honey-flow is at hand, when, of course, they do not swarm in this locality. Now, which is the better for the large honey-producer — this making full strong colonies at one operation, or a slow nursing process that involves the opening of the hive several times, with all the consequent risks?

Eighth, Mr. Dadant says he gets more brood in his deep hives. Near me are a few Dadant hives bought from Mr. D. himself, so they must be the simon-pure kind. For a number of years I have had opportunity to observe the bees in these hives, and here is what I have invariably found: When my other colonies were strong, occupying five and six shallow bodies, with from 25 to 30 combs of brood, these Dadant hives had about five frames of brood with two solid slabs of honey and pollen at the sides, and about two inches of honey next to the top-bar in all the frames, thus reducing the actual brood space to about five frames. On top they usually had a section-case in which were half enough bees to work it. If there was any honey coming in, this has been the condition of every deep hive I ever examined in my life, and I have owned and used several different kinds by the hundreds.

Ninth, Mr. Dadant admits that the circular style of egg-laying is not maintained when warm weather comes; but he attributes it to the wrong cause. He says the bees put honey and pollen here and there, and thus break up the harmony of brood-laying. I think it is due to the fact that the queen has filled the lower chamber, and the colony has developed to such an extent that brood is as easily and naturally reared in one part of the hive as another. To form a brood-nest in any part of a tiered-up hive, only three conditions are necessary: First, heat; second, plenty of bees of all ages; third, empty comb. Given these three conditions, the bees make all the harmony they ever need.

In closing I wish to thank Mr. Dadant for the kind manner in which he has admitted most of my claims in favor of the shallow hive and frames, but I also want to say that I think he is a little unfair in trying to minimize the effect of these several admissions and also by striving to compare our modern shallow hives with antiquated ekes.

Vigo, Texas.



QUEEN WANTED.

I want to buy a queen, and here is a chance for any up-to-date queen-breeders to make a reputation. First, she must be all yellow—wings, feet, and all of those little celluloid washers that make up the back part of the bee. These must be all yellow and not just the fuzz that grows on them. The sting must be yellow—no, just send us one without any sting. They are not a necessity in this locality. I want her of an intelligent turn of mind so she can instruct her progeny to make white-clover honey out of ragweed. She must also have a bad-weather and drouth attachment so her egg-factory will not shut down when we have a two months' rain; and, if short of stores, or in case of dire necessity, she can raise brood on rain water. I will pay a little above the regular price if she can make us some mistletoe honey. Mistletoe honey is great stuff at a spooning match. It comes on here about Christmas (I mean the mistletoe), when it is awfully cold (not the spooning-match but the weather). If any of you GLEANINGS fellows believe in degeneration I wish you would send me a queen that degenerated from a she bumble-bee so she could curl up in the fall and go to sleep without any thing to eat, and be happy while all the neighbors' bees are kicking for something to eat. Then when spring comes (when we have one it comes anywhere between January and July) she will wake up and hustle her breakfast off from the lilacs. But here is a technicality that might cause some one to turn down the order. If she sleeps all winter, how on earth can she get that mistletoe honey in February? Let's strike out the bumble-bee clause, as I don't want to ask any thing unreasonable.

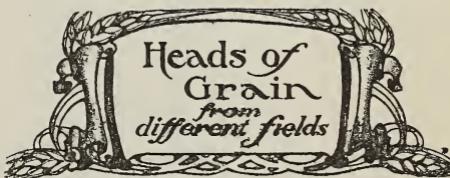
This brand of bees must have a little latitude. If they can stay here in Indiana and gather mangrove honey in Florida, and, a little later, go after the red-raspberry honey in Wisconsin and Michigan, that will suit me all right. I am not so particular about latitude.

Say! I nearly forgot to order a tongue. Lawsy massy sakes! put a tongue on this one so she can stay in the hive on rainy days and suck the nectar out of the apple-blossoms. What would any thing feminine do without a tongue? Just don't be afraid to put on a good long one, as our trees are high. I have a little garden-hose reel I can lend her if she gets cramped for store room.

But about that stinging apparatus. Better put one on, as the queen never uses them. Only have this one curl up instead of down.

It would look so much better, and that is all they are good for any way. Can't I get a queen that knows how to bring up her girls better? Now, boys are like their ma—they never do sting. But the plagy girls! When they sting I try to shame them by telling them their mamma never used to do that way, but it doesn't do any good.

Now, if you can send me a queen that can meet these requirements I will keep the lid on on Sundays, and swarm only when told. I'll try her. About the price, I don't suppose you will guarantee one to do these stunts for seventy-five cents, so suppose I shall have to pay a dollar, as I want her tested. If you prepay the charges you may send her in a special car. If not, send her in one of those wooden pill-boxes for one cent. I will pay this cent, even if I have to; as I said before, I hate a fellow that is unreasonable. I told a newspaper guy to put it in the paper about what a fine queen I was going to have, but he was not educated on bees as I am, and he thought I was lying, and he said that newspapers never publish any thing but what they know is so.



HOW TO CLIP WINGS OF QUEENS WITHOUT DANGER OF CUTTING LEGS.

I practice clipping queens, for I could no more undertake to handle my bees without clipping the queens than I could handle them without a smoker. I have, in the last four or five years, clipped about 2000 queens and haven't crippled or killed one in the operation.

HOW I CLIP QUEENS.

I catch the queen by the wings with thumb and first finger of my right hand and turn her over almost on her back; then catch her by her legs with thumb and first finger of left hand. Never try to hold a queen by one leg, as she will twirl it off. Catch two or all three legs on one side; turn her straight back, and her wings will be over the lower edge of your left thumb-nail. I use small scissors. Take these in the right hand, opened somewhat. Run the back of the scissors along on the thumb nail till you get under the wing you wish to clip. Close the scissors almost together, then clip. Do not open your scissors wide and make one big stroke, but have them almost together. Queens have four wings—a long and a short one on each side. I usually clip the two on one side one-third to one-half off. I sometimes clip queens with the small blade of my pocket-knife by catching her the same way and letting her wings come over the edge of

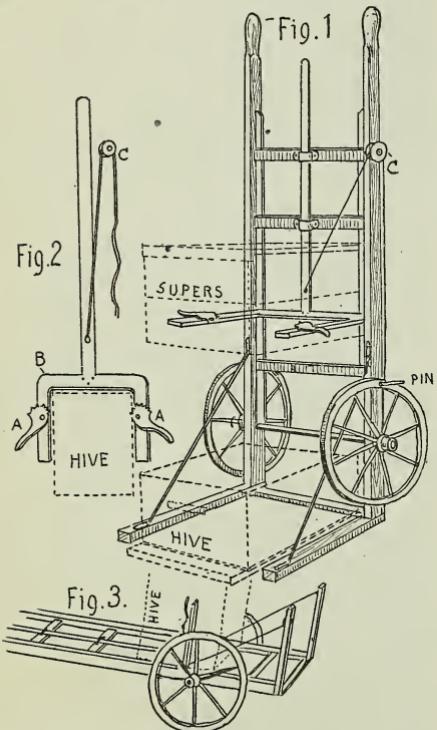
the hive on top, and clip with a sharp knife. In this way you do not catch a queen by her body, and no danger of hurting her or throwing up her leg and clipping it off.

Chariton, Ia.

L. RIEBEL.

A HIVE-LIFTER AND MOVER.

I submit my plan for the much-needed hive-lifter, as shown in the enclosed drawing. The right wheel and axle makes the windlass, after inserting the bolt (not shown) through the hub-band and axle. The frame within the frame has adjustable grip to press the sides of the hive. This frame is lowered to the desired height by the rope on windlass. Turn the grip and the hive or supers



are ready to raise. If we want to move the hive, tip the machine backward so the whole can touch the ground, and remove the bolt from the hub-band. The wheels are about two feet high, and wide enough apart to straddle the hive.

Hartford, Mich. CHARLES KLECHLER.

CLEANING UP MOLDY COMBS; GETTING BEES INTO SUPERS, ETC.

1. Will bees clean up moldy combs that contain dead bees so that they are suitable to use for extracting purposes?

2. Is it advisable to put frames of honey containing some brood in the top story, with queen-excluder between to start the bees working above?

3. Is it necessary to have chaff hives double, and packed on under side?

4. Is it best to uncap sections that are used for bait? ERNEST C. BLODGETT. Putney, Vt.

[1. Bees will clean up old moldy combs in a very satisfactory way; but not more than one such comb should be given any colony at a time, and that colony must be strong.

The best extracted honey can not be produced in old combs; but if not much brood had been reared in them, they probably would be all right. Whenever it is possible, new combs should be used, or at least combs in which brood had never been reared.

2. Yes.

3. There probably is really no need of having chaff hives packed on the under side unless they are raised on stakes some way so that the bottom-boards are exposed. Our colonies in single-walled hives protected by winter-cases, so that there is a packing-space around the walls, but none under the floors, seem to winter just as well as those in the regular chaff hives in which there is packing under the floors.

4. If bait sections are not uncapped, the new capping will look altogether different from the old, which will have become travel-stained, and for this reason such bait-sections, when finished, can not be classed as fancy. On the other hand, if the sections are uncapped they will be uniform in appearance when finished.—ED.]

SHIPPING HONEY; PRACTICAL SUGGESTIONS FROM A DEALER.

After reading a number of articles in GLEANINGS about the troubles that bee-keepers have in finding a market for their honey I should like to give them a few facts about selling honey to the grocers of this city, as that is my business.

In the first place I find that the majority of the grocers want a case of 24 sections of nice white honey. I say 24 sections, because it is just as easy to sell that size of case as it is to sell a 12-section case to weigh from 21 lbs. to not over 24 lbs., as about the first question they ask is, "How much does it cost me a section?" In most stores honey is sold by the section and not by the pound; but the dealer buys it at so much a pound, and so many pounds net to the case.

I have bought honey from a good many commission men, and do not know of one whose word I could take as to quality, condition, or weight on a lot of honey he had for sale. If a bee-keeper would raise honey, and grade it "fancy," No. 1 and No. 2 white, and the same in light and dark amber, and be honest in doing so, and pack and ship it the way Mr. Wm. W. Chase explains on page 562, April 15, 1907, he will have the same success in finding a market for his honey that Mr. Chase has. And if honey-producers would put a classified advertisement in GLEANINGS, stating what they have for sale, they would find that they could do better in getting a cash buyer for their honey than by sending it to some one to sell on commission.

L. H. MOREHOUSE.

Chicago, Ill., July 12.



And he shall turn the heart of the fathers to the children, and the heart of the children to the fathers, lest I come and smite the earth with a curse.—MAL. 4:6.

It has just been my good fortune to have the privilege of spending a couple of hours with Prof. Holden, of Ames, Iowa, the celebrated "corn man." I can not take the space here to tell you about our rambles in the cornfields of this county; but I wish to give you a part of the closing words of his two-hour lecture. His audience was composed largely of old people—perhaps most of them gray-headed. This is a catching time for haying and harvesting; in fact, it was the last day of July when Mr. Holden visited our Medina Co. Chautauqua Assembly, and, as a natural consequence, the young, and able-bodied men were most *exceedingly* busy. Said he:

"Now, I have got something to say to you old people, and you want to mark my words. Do not get it into your heads that you will have an easier time by selling out or turning your farm over to the children and going to town to live. Don't do it. The town people do not want you. The country people *do* want you. I know you think there will be a good many comforts in the town, and that you can take things easier, etc. You are making a big mistake. Look around you and see. The people in town are not interested in the stories you tell about the crops you used to raise. And, by the way, please notice that you forget a little, and every time you tell the story you get it a little bigger. The folks in town laugh at you. They don't know you, like your old friends and neighbors in the country, who make allowances. Besides, you are worth more in the country, where you were brought up, than anywhere else in the world, and you will be very much happier there to the end of your days."

The above reminds me of a letter I just received, striking on this very point; and even though the good lady does say at the end, "This is a strictly private letter," I have taken the liberty to copy a paragraph or two, of course omitting the name and address:

I wish to express my gratitude to Mr. A. I. Root for his kind advice as to accepting a present of several colonies of bees six years ago. I had given up my lifework; and I have been led to see that, when elderly people "retire" they go down mentally; and if they go much beyond their allotted "threescore years and ten" they become imbecile much sooner than if busy, even if it be "busy idleness." My bees have increased until I have more than I can manage very well by myself, and the labor problem is something fearful here. I should like to know from some experienced person if one could put a colony "out of commission" in the fall and get honey only out of the brood-chamber to pay. I hived

only swarms that took reasonable places to settle: the rest took to the mountains.*

During the last years of my father's life, when I saw him working on the farm I thought it was too hard for him, and persuaded him to move to town and help me in the store. Well, he did so, and he stood it for about two years; but he was not used to being indoors nor to waiting on customers, and he became unhappy and discontented and out of health; and as the farm was not yet sold he went back there, and soon became, I might almost say, young again, with his cows and horses and pigs and chickens. I have seen many such instances.

Prof. Holden went on to say that when old people decide to stay on the farm they should use a little common sense; and he illustrated it by telling about his own boyhood days. By the way, his home was near Traverse City, Mich., the locality I have told you about so much; and he said, as we were going along through a cornfield, that there was an inspiration and vigor out in the open air in *Northern Michigan* that he never got in any other locality. Now about his boyhood.

He said that, when he was about fourteen years old, one Monday morning his father called the boys out on the porch and said something like this: "Boys, I want you to help me plan about the way in which we shall manage our farm this year. You are going to do a great part of the work, and I want you to advise about what crops we shall grow, how we shall plant each particular field, etc."

"Why," said he, "we boys in our teens grew an inch or two taller that very morning. We went and told the neighbors' boys about it. We talked about *our* farm and what we were going to do and what crops we would raise. In looking back I think that was one of the biggest speculations my father ever went into—making his boys *partners* in the farmwork."

Now, I wish I could tell you the rest, but I can not take space. The boys took a course in the Michigan Agricultural College under our good friend Prof. Cook. Why, I could see and hear friend Cook's words and actions in every move the speaker made while on the stage. It was actually Prof. Cook over again!—his genial smile, his enthusiasm, his peculiar gestures, etc.

Well, after the boys got home from college the father took them out on the porch *again* and said, "Boys, I am getting too old to

* Will some of the veterans or others who have had experience in getting rid of bees where there was no sale for them tell our friend how to get the honey and get rid of the bees? I sincerely hope nobody will take the back track so far as to suggest or advise brimstone at the present stage of our industry.

+ By the way, it is not surprising, and it ought to be encouraging, for our great teachers to know that in after-years their impress is left on men and women scattered all over our land. In traveling every little while I find men occupying important places who got their first training for usefulness in the Michigan Agricultural College; and the greater part of the time it transpires they were pupils under Prof. Cook. May be it is all right as it is, but it has often seemed to me that he was needed more in the great State of Michigan than away off in California, where he is comparatively unknown and out of sight.

run this farm. I am going to turn it over to you. I will be hired man and mother will be hired girl, and we will try to make ourselves useful while God lets us stay with you."

Then he gave us an illustration of how the old father made himself *useful* by letting go of the hard work. One day the mowing-machine was hauled out into the yard. The father said, "Boys, is the haying all done?"

"Yes, all done."

"Then you will have no further use for the mowing-machine this season. I will fix it up so it will be ready for use next year."

"The old gentleman went to work at it very slowly and deliberately," continued Prof. Holden, "examined all the bearings, made such repairs as he could where there had been wear, took off the knives, and the first rainy day when we boys could turn grindstone he ground them up in beautiful shape, stowed the machine where it would be out of the way for the following six or eight months, and finally tied a piece of red rag on it, put up in a conspicuous place, with the understanding that any machine that had the red-rag signal was all in tiptop order and ready for work."

Now, friends, what do you suppose the saving would be during the season if all of your farm machinery was all cared for in that way? How much would such an "old man" be worth on a farm? That is one of the things old people can do, and which they ought to enjoy doing. I believe the old mothers are in the habit already of making themselves useful in that way.

Dear friends, I am sorry to say—in fact, I am sorry to ask you to look about you and note the instances where the young people and the old people *have not* got on well in just the way that Prof. Holden has pointed out. It grieves my heart whenever I hear of old fathers and mothers (especially where they have reared large families) who do not seem to be wanted anywhere. Sometimes the fault is on one side and sometimes on the other. But I am forced to believe it is mostly on account of the way the parents have brought their children up. "Whatsoever a man soweth, that shall he also reap" applies not only to seed corn but to raising boys and girls; and there is nothing in this world that I know of that will turn the heart of the fathers to the children and the heart of the children to the fathers, as in our opening text, like the gospel of Jesus Christ. There is nothing in the world that I know of that will hold the family together like that dear old Bible, the blessed word of God.

Let me say in closing that I am really enjoying my old age. Besides the ducks that I have told you so much about I have my little greenhouse, my flower-beds scattered over the lawn, and a garden of foliage plants, especially such as will not bear the noonday sun, on the north side of the house. Then I have a cutting-bed out of doors where I have learned to make all sorts of things grow from cuttings—the cuttings placed in wet sand. Several times a day I go over the

grounds, through the factory, printing-office, and look over that part of the mail that is addressed to myself. When I come across some of the younger ones in trouble or perplexity I really enjoy helping them out. I know the younger people are glad to see me. A shower was coming up a few days ago when they were cutting hay, and they wanted more help. I told them to send to the foreman of a certain department. The teamster replied, "Mr. Root, it will not do a bit of good. They will not pay any attention to it whatever. They will say they have not a man to spare. If you will just go over and tell them what you want you will get it in a minute."

Now, friends, here is an illustration of what an older man can do. It is true I might have called men off from almost any job; but if I did not inquire into the matter, I might have stopped some work that was of ten times more importance than the hay with the thunderstorm coming up; but after looking over the ground and shifting men a little from one department to another I succeeded in getting two hands who were experienced farmers, and our hay crop was secured without a bit of injury from rain, except a shower of about ten minutes after the last load was put on the wagon and on its way to the barn. Old men have learned by experience how to manage things without making trouble; and an elderly man who has made a success of business has usually learned how to give emergency orders without provoking ill temper or even bad feeling among his men.

I read a few days ago that the explorers in some of the northern regions came across some Esquimaux who got rid of their old people (their fathers and mothers), when they had ceased to be useful. The way they managed it was to build a little hut of blocks of ice, put the old people in them, then throw water all over the cracks until every crevice was frozen up and sealed, and the old people were left to smother. You see they would be out of sight so the children could not witness their sufferings, and then they would be already *buried* in ice. Of course, the gospel had never been preached in those regions. You are well aware that, away down in the tropics, before Christianity had gained a foothold the old people were thrown over precipices when they were no longer of use. May God be praised that such things are known now in only a very few spots in the remote corners of the earth. In our own United States, as a rule our old fathers and mothers are revered, respected, and cared for. There are some exceptions, of course. There are times when either the young people are unfeeling and unfilial, or else the old people are crabbed and cross, so that no one could get along with them. Sometimes they are sent to the infirmary, even when the young people are well-to-do; but the community generally makes a fuss about it, and may God be praised that this thing is not very common.

Let me now say to the dear brothers and

sisters who are getting old and gray-headed, and who begin to think they are not of much use in this world, let me beg of you, dear old friends, to beware how we get into a habit of complaining and scolding and finding fault, even if things are not as they used to be when we were young. If we have pains and aches, let us be careful about having too much to say about it when the younger ones are around. Above all, let us strive to make ourselves useful, and that, too, without worrying the younger folks. Let us strive so to live that they will be glad to see us when we come around. How pleasant it is to have a child—yes, and a grandchild too, say, "O grandma! I am so glad you have come! you can help us so very much in the fix we are in!"

And another thing, it will not be half so hard to be cheerful and pleasant and good-natured when we have some little duties of our own to look after. For a year or two past Mrs. Root and I have had no garden of our own—that is, here in Medina. The garden stuff is grown mostly in the fields or in the children's gardens. A few days ago Mrs. Root said, "I should like just a little garden all my own, close by the house, where I can see things grow, and go and get them myself."

I said, "All right, Sue. You shall have a little garden right near by, where you can see it a dozen times a day, and I will make you the daintiest little garden that has ever been seen since the time when Adam and Eve lived together in the garden of Eden."

Well, it took me some time to get it in shape; but now it is one of the joys of my life. Shall I tell you what is in that garden? There are just two cabbages, four pepper-plants, and eight tomato-plants (Mrs. Root is particularly fond of tomatoes); besides this there are four stalks of rhubarb and about fifty strawberry-plants—I have three plants each of all the most popular varieties. For myself I would rather have the old-fashioned Sharpless than any other strawberry grown. The garden is so small and so near by that I can watch every bud and blossom. I find every cut-worm or cabbage-worm as soon as it commences gnawing a single leaf. The tomatoes are trained on a trellis; and it is just fun to tie up the new shoots every morning. The ground was first prepared by plowing under a great lot of old fermented manure from the cow-stable. Then I put on a good dose of bone-dust and ashes. I had to put a two-foot poultry-netting around the same to keep the ducks out; but that two-foot fence serves to keep dogs and chickens and toddling grandchildren from unconsciously and innocently marring our treasures. God's first gift to Adam and Eve was a garden; and, dear gray-headed brother and sister, such a little garden will not only keep you from growing old prematurely, but it will be a great preventive of that fearful thing that is sometimes to be more dreaded than death itself—losing our minds and becoming imbecile. Of course, in that little garden you want the very best and choicest of every

thing; and in order that you may have it you should read the papers and keep posted. Why, every new leaf that comes out on my new and choice varieties of strawberries gives me another thrill of pleasure every morning.



HOME TREATMENT FOR TUBERCULOSIS.

Since my write-up in regard to my sister's case a great amount of correspondence has come up; and some professional men have congratulated me on having mapped out the way in which any sufferers might have most of the advantages of an expensive sanitarium while they remain in their own home. So many have made kindly inquiries in regard to the progress toward recovery that my sister is making I have thought best to submit to you a letter recently received from her:

Brother Amos:—I am still taking treatment, and I think that I am getting better, but when such a day as this comes, cold and foggy, I am discouraged, as it is so hard to breathe easily. Your letter, containing the one from California, came yesterday. How nice it seems to feel that even strangers have an interest in one's recovery! I thank you and your friends most heartily. I have a very strong feeling against leaving my home, and for one so advanced in years it seems foolish to think of it. Great cures have been performed here in our own town. I was attracted one morning by a sign "Flowers for sale," in a remote part of our town. While there the lady told me that, five years ago, she was given up by all of the physicians here, excepting one (Dr. McLarty). He told her if she had a bit of sand at her home to go out and sit there all day long. She did so; but soon began to dig, and finally planted seeds, and soon put up a sign, "Flowers for sale." She is now a healthy woman. She supposed she had consumption. I wrote this for the *Advance* last year. Perhaps you may have seen it. I have no sand very near, but think I shall soon try the cure, especially if I go to Onekama. All my mornings are taken up now with the treatment.

This woman where I go has a husband who had consumption, they supposed, years ago. She prepared a remedy that cured him, and is certainly helping me. She takes goose oil (no other will do), chops a lot of onions and cooks them in it, then she adds turpentine, peppermint, and chloroform, then applies it to the surface of the lungs (on cloths wrung out of hot water), and then applies the oil, all the time rubbing the surface till it is well absorbed. Relief is obtained immediately. I am there usually an hour and a half, and feel very much benefited each time. I have told you this remedy, as I know she has performed many cures with it, and a good thing should be passed on. She is greatly in favor of outdoor living also.

With love to all,

SISTER SARAH.

After receiving the above I wrote for further particulars in regard to the treatment, and she gave me the following additional:

My dear Brother:—The woman who gives me treatments is a professional nurse; has her home arranged to give brine baths and massage, but pays particular attention to lung troubles. Several years ago her husband was very low with consumption. They sold their home here and sent him to Colorado. He grew worse there, and she went and brought him home and went to work to save him, and discovered this remedy I told you of. He is working every day, and comparatively well. She says he uses a great many lemons and also eats a great deal of honey, and occasionally he takes quinine if he feels chilly. She has certainly done well for me. I walk over to my daughter's (one-half mile) and back after supper, and do not mind it.

I think it is better for me to stay at home and be quiet. I hope to get so well this summer that I shall not be obliged to leave home this winter. I find when a housekeeper has been laid up for nearly a year there are many things to look after, so I am pretty busy—when I want to be.

A CAUTION FROM A TRAINED NURSE.

It is really alarming the numerous cases of tuberculosis that are rapidly developing here. This nurse says, "Our young women are all going to die if they do not change their mode of dress. Such very thin waists, just where there should be protection, and low shoes and thin stockings, are very destructive to health."

MRS. C. D. GARDNER.

Manistee, Mich., July 11.

Now, although I am not a doctor I wish to take the liberty of suggesting that the hot water, the rubbing, and the animal oil to wind up with, is about all that is essential. The turpentine may, however, have some beneficial property; and while I think of it I wonder if *duck oil* ("Indian Runner ducks," of course) would not answer just as well as goose oil. May God help us in this effort to help ourselves along the line of God's pure air, outdoor exercise, pure water, and wholesome food.

A HINT IN REGARD TO BATHING.

Some years ago I told you of the wonderful benefit I received while at the cabin in the woods in taking frequent shower baths out in the woods; and I have wondered since then why I did not receive a like benefit when I take a bath (once or twice a week before retiring) here at my home in Medina. I think the secret of it is that, while up in the woods, I wore so little clothing that it was no trouble at all to strip off and take an open-air shower-bath back in the woods out of sight when I *felt like it*; and the times I felt like it were particularly when I was covered with perspiration from working in the potato-field; and I noticed, also, that this perspiration often felt sticky or glutinous, especially when it was the first severe exercise out in the sun that I had had for the season. I had an instinctive feeling at the time that, unless this glutinous sticky matter that seemed to cover me from head to foot were washed off *immediately* it would not all come off. If I sat down in the shade until my body and light clothing became dry, and then took the bath in the evening, even with soap and water, no such exhilaration of feeling followed as with the open-air shower bath at the time I was covered with sticky sweat. Please excuse me if I am taking space to make this matter plain, for I deem it an extremely important thing. I remember that, one afternoon, I had planned to go over to neighbor Hilbert's, a mile and a half through the woods, when I had completed a certain piece of work; but by the time I got through I was so tired that it almost seemed as if I could hardly drag one foot after the other; but after taking a good wash in that shower bath, all the weariness and used-up feeling were gone. Not only had strength come back, but exertion seemed so easy I almost felt as if I could fly. I went over to my neighbor's and back again (three miles) without feeling the least bit of fatigue. I

remarked at the time that, if I had taken some drug or medicine, I should have felt troubled about it, because I could not conceive how such an amount of strength and energy could come without any reaction afterward. My comments on the matter were copied by Dr. Kellogg, of Battle Creek, and he called attention to the fact that, in his large medical book, there is a statement that a shower bath is one of the greatest stimulants known, and at the same time, if taken properly, no bad effects ever follow. Now here comes something from the Philadelphia *Farm Journal* which not only indorses but explains the very fact that I have been trying to get before helpless humanity; and the great point summed up is that the very best time in the world to take a bath is when you are covered with perspiration, and while it is streaming from every pore. If you are where you can not have access to soap, my opinion is that it does not make very much difference. The glutinous matters that nature throws off will take the place of soap.

The man who works all day in the hot sun, with perspiration streaming from every pore, will at night be covered from head to foot with a thin coating of effete matter, which, if not removed, the absorbents will take right back again and carry back into the body, clogging its delicate machinery and acting as old gummy oil does on a mowing-machine. If he sleeps at night in the same clothes worn during the day, still more of it will be absorbed. When a man comes in tired from the field, it is a temptation to sit down in the nearest chair or lie on the nearest lounge, until, he learns by experience that this is not the best way to rest. If a room can not be spared for this purpose, a shed or lean-to near the kitchen door, would make a good summer bath-room, where basins, tubs, towels, and soap could always be handy; and a quick bath and rubbing, and clean evening clothes, will make a man much more agreeable to himself and others. Here the soiled working-clothes can hang and air through the night, and the evening clothes through the daytime.

SELLING SECRETS, ETC.

The various poultry-journals seem to have encouraged this business of advertising secrets more than any other class of journals. I have sent the money and got quite a number of them; but the secrets are so absurd, and of so little value, that I have not thought it worth while to give them space here in GLEANINGS. I will, however, give you one as a sample. It is a fair average of the whole lot. It was sent in by one of our readers who suggested that I get the valuable secret and give it to the rest. Read it, and see if it does not look reasonable that such an advertisement should rake in the dollars from our hard-working people:

TO MAKE HENS LAY EGGS.

It will make every hen on your farm a steady layer—*you can depend on it*. It is correct in principle, and has for ages been an approved regime for game cocks to give them courage and endurance.

I have found that for which poultry-men have for years been seeking, viz.: something that will cause hens to lay eggs as well in winter as in summer: something that will do the work, not merely claim to do it. The problem of winter egg production is solved. The day of unprofitable hens is past. Poultrymen can now have their hens lay plentifully whenever they desire. Nature's secret is out. I have wrested it from her. It took years of close observation, patient thought, and careful experiment, but the results high-

ly reward the effort. For ten years I worked away in the poultry business, depending on scientific feeding and good housing for winter eggs, as you likely have done, only to be disappointed. I was groping in the dark. Then a thought came to me—it was nature's secret; I knew it at once. I began immediately to experiment. I applied the most severe tests. The results were always the most satisfactory. At any time of the year, and under unfavorable circumstances, hens that were not laying would at once respond to my treatment, and soon begin to lay plentifully, reaching in a short time a 75-per-cent yield, and maintaining that average as long as fed the prescription. Now I am enthusiastic. I have a right to be. My secret is worth more to the egg-farmer than all else he has ever learned. I now wonder that I did not make this discovery sooner; and when you learn my secret you will wonder that you never thought of it. You will agree at once that it will bring you success, because you will work in harmony with nature.

It is not difficult to get. The ingredients can be bought in any drugstore. It will not weaken your stock; it makes them bright and vigorous. Remarkable results have been obtained from the use of the formula. Neighbors will wonder by what method you secure such numbers of eggs.

Fill out this form and enclose it with one dollar, and these secrets will be mailed to you; and after having received them I am confident you will freely concede it was the most profitable outlay ever made.

Bradford, Pa. CHARLES STEWART.

The conditions were, of course, that I should send along with the dollar my signature to a promise not to divulge, etc. I did not make the promise, however, but I got the secret all the same. In fact, I do not know that I have ever failed. When these chaps get hold of cash it is too hard work for them to let go of it and send it back. Well, here is the substance of what I got for my dollar:

FORMULA "A."

Stir into the water for the daily mash one drop for each four or five hens of tincture of cantharides.

FORMULA "B."

Stir into the water for the daily mash one teaspoonful for each 30 or 40 hens of common black gunpowder.

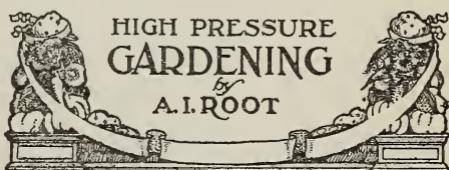
Feed formula "A" each day for one week and then alternate with formula "B"; i. e., feed "A" one day, "B" the next, and so on.

It is not necessary to feed these condiments every day after the first three weeks. Once every three or four days will be often enough then, but feed formula "A" every fourth day all winter. In mild weather once a week is often enough. Each time "A" is fed, the following day feed "B."

Wonderful to tell! Tincture of Spanish flies and gunpowder! I wonder if a little dynamite or nitro-glycerine in homeopathic doses would not work better still. Well, I shall have to confess that I have not even tried the above, even if I did invest a dollar. I object, not only to dosing chickens with drugs and chemicals, but I object to drugging humanity in the same way. One of our best physicians said recently that giving medicine was a bad way to cure folks, any way you can fix it. Granted that medicine does sometimes give relief or effect a cure, he said that, in the majority of cases, the drug may make a disturbance somewhere else, so that in the end it is a question whether the medicine was a real benefit or not. Now, if any of you poultry people want to try cantharides and gunpowder, all right—go ahead. You have the great secret without its costing a dollar each all around.

While the above was in my hand a letter was handed me inclosing an advertisement headed "A chance to make money." It is

the "California cold process" of keeping grapes, peaches, apples, etc., fresh. The way you "make money" is by going around among your neighbors and getting a dollar of each by showing them the trick. If you send any money, however, you will find you have been tricked yourself. To do the "trick" you have to go to the drugstore and get some "compound extract of salix." A footnote says, however, that some druggists do not keep it (you will find no druggist keeps it), but they will send you enough for a dollar to put up a great lot of fruit. Now, this does keep fruit after a fashion; but after having sampled some of it I do not call it good; and, besides, they use a preservative that has been pronounced unwholesome, and which has been ruled out by the government. The rascals who advertise this should be sent to the penitentiary; and something ought to be done with the papers and periodicals that accept such advertising. I have repeatedly warned our readers against investing in the same thing. See GLEANINGS for Sept. 15, 1906.



YELLOW SWEET CLOVER, ETC.

What is the best time to sow it? Are there two kinds of the yellow? I got enough of G. W. York to sow an acre, and sowed it with oats. It came up well, and grew four to six inches high, then bloomed. None of it reached 12 inches high, and I believe every bit of it died, root and stalk. What is the trouble with it? I sowed three acres of the white sweet clover at the same time and in the same way, and it is all right. I never heard the white variety blooms the first year.

I am much interested in honey-plants. I have sown buckwheat for many years among the corn, just before plowing it the last time over, solely for the bloom or honey, and I am satisfied it has paid me well one year with another, even if it does fail some years.

I tried a bushel of that new hulless buckwheat last year. It grew finely and bloomed heavily but scarcely a bee touched it. I shall try it once more. It is a big producer, but it is hard to save the seed, as it falls off so easily.

M. W. HARRINGTON.
Williamsburg, Iowa.

So far as I know, there is only one kind of yellow sweet clover; but it is much more inclined to blossom the first year than the white. It blossoms earlier, and does not grow so tall; but I think yours that grew only four to six inches must have been on unsuitable soil or the weather was not favorable. I have never known it to blossom so early. There is a constant unsupplied demand for yellow sweet clover. As soon as anybody has any seed for sale I wish he would let us know. Your idea of sowing buckwheat among the corn at the last cultivation is something I do not remember to have heard of before. But we get very good crops of crimson clover sown in the same way, and I can not learn that there is any objection to sowing crimson clover with

buckwheat as a regular thing. In our locality the crimson clover comes right on rapidly as soon as the buckwheat is harvested, or killed by frost, and it has always wintered nicely with us so far. I do not remember that I have before heard of the hulless buckwheat that you speak of. Can anybody else tell us about it, and tell us where the seed is offered for sale?

SWEET CLOVER—DOES IT WINTER KILL?

The seed you sent me I sowed on clay land last spring, 1906. It made a good stand last summer. It is almost 3 ft. high now, and looks fine, but it winter-killed in spots, making it uneven. I think it would be a fine clover for the South; but I fear it winter-kills too badly for the North.

Lanesboro, Ind.

CLARENCE NEAL.

Friend N., we have never had any trouble with winter-killing when the seed was sown tolerably early—say before July. When sown in the fall it has sometimes failed to winter over. But the seed that drops off and sows itself always makes a stand with us, especially along the railroad tracks where the hard clay subsoil is piled up in heaps. These heaps are covered with a dense rank growth of sweet clover year after year, where it is not molested, and where cows and other stock can not get a chance to eat it off.

JAPANESE CHESTNUTS; THEIR QUALITY; WILL THEY BEAR?

Mr. Root:—Some time ago you said you wanted to hear from subscribers who had been raising chestnuts. I bought some Japanese Mammoth chestnuts, and planted them, and they came up and grew, and bore nuts in about four years. The nuts are very large, about 1½ or 2 inches across, and are of very poor quality according to my estimation. They tasted about like a red-oak acorn, but not quite as astrigent. They might be better cooked, or in other localities they might be better than they are here. I never tried them any way except raw.

Paducah, Ky.

ALBERT R. SHERRON.

Why, friend S., that is just wonderful, if you grew a tree that bore nuts in four years from the time they were planted. I do not quite agree with you in regard to quality—that is, if yours are like those I have found on the market. It is true they are not very palatable when raw; but when properly roasted I find them not only delicious food, but very nutritious, and easy of digestion. I am inclined to think there is a difference in quality, for the tree I have mentioned on our premises bore one nut last season that was as rich and sweet as almost any of our native American chestnuts. Well, if we can expect to get bearing trees in four years, quite a lot of us will go to planting chestnuts. I suppose they should be planted in the fall, soon after being gathered. Who can tell us more about this?

THE "DANDELION COW," ETC.

Quite a number of our agricultural exchanges have copied what I said in regard to the value of dandelions for milch cows, the New York *Tribune* included; but only one of them seems to have had practical experience enough to indorse my statement. Here is what T. B. Terry says about it in the *Philadelphia Practical Farmer*:

Mr. A. I. Root, in GLEANINGS, tells of the wonderful effect that a dandelion pasture produced in giving a free flow of milk in his family cow. We have found the dandelion, when grown in a sunny exposure in early spring, one of the best milk-producers imaginable, and giving a rich golden-yellow color to cream and butter.

What I wish to get at particularly is this: Is this cow of ours peculiar, or would all cows take dandelions, or the majority of them, as this one does? And is it the fact that these dandelions which grew unusually rank (because they were on rich underdrained soil) were more greedily appropriated by the cow?

LATEST FROM OUR ROBINSON CRUSOE ISLAND.

Dear Friend:—Your letter is at hand asking about the Caucasians as honey-gatherers. I really don't know, for I haven't given them a good test because I have been drawing from them so much to keep nuclei going. They began storing honey first, and I didn't know whether it was the bees or location; but the apiary on the main land has averaged better; but taking bees from these continually would surely make a big difference. I have taken 1600 lbs. of honey, and think there is four or five hundred more about ready—about all cabbage honey. Mr. Drumwright says he never before knew the palmetto cabbage to make such a yield.

We are very sorry Mrs. Root is having her old trouble. It must be bad not to be able to sleep in hot weather. Tell her to come and listen to those singing hens—one of your white ones especially. She is the most wonderful "singer" I ever heard. It is her daily stunt to march around the house and sing at the very top of her voice, until the women-folks declare she seems to want to proclaim to all the world that she belongs to Mr. Root; and how she does lay—almost an egg every day since you left.

Osprey, Fla., July 30.

I. T. SHUMARD.

I will explain to our readers that that particular pullet's mother was remarkable because she was always laying eggs or raising chickens every month in the year, even in Florida, where hens seldom lay during the hot summer months. In order to get in more time she always began laying when her chickens were ten days or two weeks old; and then as soon as she got another nesting of eggs she would begin sitting again. I am glad to know that at least some of her five daughters have inherited some of her valuable traits.

THE ONLY SOLUTION OF THE LABOR QUESTION.

We clip the following from an article in the *Chicago Advance*:

Men who want open saloons and closed churches on Sunday will never establish enough rights to be worth talking about. But if all the wage-earning world were to "repent and be converted" most of the labor problems would be solved before the year is out. When the masses turn to God they will turn this old world of ours upside down and set it right side up so quick that the angels will come down to join in celebrating the achievement.

The above does not include with the "wage-earning world" the employers and capitalists as well, but the writer no doubt means that that should be so understood. When the people generally, rich and poor, turn to God there is no question but that the angels in heaven will *gladly* come down to join in the celebration.

Bee-keepers' Directory.

QUEENS.—Clover stock. Experience and methods count. Write me. H. G. LARUE, LaRue, Ohio.

ITALIAN queens bred for honey, untested, 75c each. GEO. H. PLACE, 816 No. 49th St., Omaha, Neb.

Extra honey queens and choice mountain honey. Francis J. Colahan, Bernardo, San Diego Co., Cal.

QUEENS.—Pure Gold, Red-clover, Caucasian, Banat. ROSE LAWN APIARIES, College View, Lincoln, Neb.

ITALIAN QUEENS.—Golden and, leather, 60c each; worth \$1.00. G. W. BARNES, Box 340, Norwalk, O.

Bee-keepers' supplies, Italian queens. Send for a free catalog. ARTHUR RATTRAY, Almont, Mich.

ITALIAN BEES and queens—Red-clover strain imp'd mothers. A. W. YATES, 3 Chapman St., Hartford, Ct.

ITALIAN BEES, queens, and Root's bee supplies. E. SCOGGIN, Carlsbad, N. M.

I club a high-grade Italian queen with GLEANINGS, new or renewal. W. T. CRAWFORD, Hineston, La.

WANTED.—500 colonies of bees in Texas, Arizona, or California. N. E. MILLER, Box 373, Logan, Utah.

ITALIAN BEES and queens—red-clover and golden strains. E. A. SIMMONS, Greenville, Ala.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York City.

ITALIAN bees and queens bred for honey; price list free. B. F. YANCEY & SON, Angleton, Tex.

FINEST Golden and red-clover queens, Caucasian and Carniolan. DANIEL WURTH & GRANT, Pitkin, Ark.

ITALIAN AND CAUCASIAN bees and queens of best quality; price list free. A. E. TITOFF, Ioamosa, Cal.

MAPLEWOOD APIARY.—Choice comb honey, Italian bees and queens. GEO. H. REA, Reynoldsville, Pa. R. 2.

ROOT'S SUPPLIES at factory prices; wholesale and retail. ANTON G. ANDERSON, Holden, Mo.

ITALIAN BEES, queens, and bee supplies. H. H. JEPSON, 182 Friend St., Boston, Mass.

ITALIAN BEES, queens, comb and extracted honey. A. T. DOCKHAM, Rt. 1, Box 95, Eagle Bend, Minn.

ITALIAN BEES, queens, beeswax, honey, and bee-keepers' supplies. M. E. TRIBBLE, Marshall, Mo.

FOR SALE.—Bee-keepers' supplies. Write for catalog. Lengst & Koenig, 127 S. 13th St., Saginaw, Mich.

FOR SALE.—Golden and red-clover Italian queens. WM. A. SHUFF, 4426 Osage Ave., Philadelphia, Pa.

ITALIAN BEES and queens—red-clover and golden strains. E. E. MOTT, Glenwood, Cass Co., Mich.

SWARTHMORE Golden-all-over, Caucasian, Banat, Carniolan, Cyprian queens. E. L. PRATT, Swarthmore, Pa.

GOLDEN yellow Italian queens—my specialty. Price list free. E. E. LAWRENCE, Doniphan, Mo.

ITALIAN BEES, queens, honey, and ROOT's bee-keepers' supplies. ALISO APIARY, El Toro, Cal.

FOR SALE.—Root's bee-supplies, wholesale and retail; factory prices; catalog free. Beeswax wanted. W. E. TRIBBETT, Staunton, Va.

I must say to my friends, please do not send me any more orders for queens this season, as my health is so poor I find it impossible to continue queen-rearing. Thanks to all my friends for their very liberal patronage. W. W. CRIM, Pekin, Ind.

GOLDEN-ALL-OVER Caucasian Banat bees and queens. We book orders for early queens from our best imported breeding stock for honey, with 600 twin mating-boxes. THE SNYDER APIARIES, Lebanon, Pa.

QUEENS.—Improved Red-clover Italians bred for business; June 1 to Nov. 15, untested queens, 60c; tested, \$1.00 each. Safe arrival and satisfaction guaranteed. H. C. CLEMONS, Boyd, Ky.

IMPROVED ITALIAN QUEENS now ready; nuclei and colonies about May 10, Danzenbaker or L. frames; 20 years a queen-breeders; 500 colonies to draw from. Circular and testimonials free.

QUIRIN-THE-QUEEN-BREEDER, Bellevue, Ohio.

ANGEL'S GOLDEN BEAUTIES and his bright three-banded Italian Queens have but few equals and no superiors. A fine large queen of either strain for \$1.00; an extra select breeder for \$2.50. I have had 12 years' experience at queen-breeding. Address SAMUEL M. ANGEL, Route 1, Evansville, Ind.



QUEENS FROM OUR OWN APIARY.

We now have about the nicest lot of Italian queens reared in our own apiary, from our choicest breeding queens, that we have ever sent out; and we have such a surplus that caged queens are every day placed on the mailing-table to be sent off almost the minute the order reaches us. We also have a nice lot of Caucasian queens reared on the Florida Island. So if you want a queen quick, and want something the best The A. I. Root Co. can produce, now is your time to get it promptly.

PRICES ON SUPPLIES FOR 1908.

We are at work on a revision of our catalog for the season of 1908, and are not ready as yet to announce such changes in prices as we may find necessary. The past season has been most disappointing, not only to bee-keepers but to supply-dealers as well. After paying all fixed expenses the returns for the year have been very small—indeed, less than any other year since we have been organized as a company. Although material and labor have advanced steadily, there has been no general advance in prices in four years; and because of the unfavorable honey-yield we have been reluctant to advance prices on supplies; but the time has come when such a course seems inevitable if we are to receive a fair return for capital invested. Till further announcement we will continue to fill orders at prices as they appear in our catalog for 1907.

Special Notices by A. I. Root.

INDIAN RUNNER DUCK EGGS.

Mr. Kent Jennings, of Mt. Gilead, Ohio, who furnished me eleven Indian Runner duck eggs for \$1.00, now offers thirteen for the same price.

A CUTTING-BED FOR STARTING FLOWERS, FOR CHILDREN.

Two of our grandchildren, seven and eleven years of age, are now interested in making cuttings from coleus, *Impatiens sultani*, dusty miller, and other ornamental plants. They use a shallow box about half full of coarse sand, with a pane of glass to lay over the top, and a light thin board to cover the glass when the sun is too hot. With a pail of potting-soil and some nice little pots for the plants when they get rooted, quite a lot of nice plants may be grown, even by a child, and it can all be done outdoors on the lawn. Miss Mildred, the older one, promises to become quite proficient in the art.

SUCCESSFUL POULTRY-KEEPING.

The above is the title of a beautiful new book of 175 pages, 9x12 in., most fully illustrated with some of the finest half-tones, and the illustrations are gotten up especially to illustrate the subject treated. One especial value of this book is the great number of questions and answers. One that especially interested me was, how to distinguish drakes from ducks. The answer was, "By the sound of their voices," etc. No one would think a dollar a big price for this beautiful new book, especially if he is interested in poultry. We can send it postpaid by mail for \$1.00.

THE A B C OF CORN CULTURE; OR, "MAKING TWO NUB-BINS GROW WHERE ONLY ONE GREW BEFORE."

The above is the title of a book by Prof. P. G. Holden, of the Iowa State College. The title alone, with the name of the author, ought to be sufficient evidence that the book is one of the most valuable (especially to everybody who grows an acre of corn or more), books of its size and kind now before the American public. Prof. Holden has already, although he is still a young man, added by his teachings millions to the wealth of our nation, and he is at present entirely unable to respond to calls made from the different States to give his celebrated lectures on corn to audiences that almost invariably go away up into the thousands. It contains nearly 100 pages, and is beautifully illustrated; and, although 25 cents is but an insignificant price for a book of such value, a subscription for one year to the *Farm News*, of Springfield, O., is included with each book; for sale at this office.

THE FORAGE AND FIBER CROPS OF AMERICA.

Prof. Holden, in his lecture a few days ago, told us that the corn crop of Ohio for last year was worth in round numbers \$45,000,000. This is away above any other crop; but next to it comes the hay of Ohio. And this reminds me that the O. Jud Co. has just gotten out a beautiful new book with the heading as given above. The book contains 428 pages, and is fully illustrated. It is by Thomas F. Hunt, of Cornell University. It discusses all of the clovers and all the legumes, and ought to be exceedingly valuable. So far as I can discover, it seems to be orthodox on almost every thing except our old friend sweet clover. Instead of writing sweet clover up to date as it justly deserves, they content themselves with a brief quotation from the Nevada State Bulletin for 1900, and the book is permitted to get out containing the following sentence:

"It is, however, exceedingly distasteful, either green or cured, to all classes of domestic animals, and hence unfit for forage." I immediately wrote to the publishers, and told them I thought the book should not be sent out without an appendix correcting the above, and giving sweet clover the credit of being ahead of all other plants for inoculating the soil with the "nitrogen nodules" that are just now not only being discussed but actually worked at the present time. The book gives a considerable chapter to this matter of nitrogen bacteria, and makes some brief allusions to the part that sweet clover has played and is still playing; but such references are altogether too brief.

The chapter devoted to alfalfa is valuable; also those devoted to the different kinds of beans and peas

used as forage crops. The price of the book is \$1.75. Mailed from this office postpaid on receipt of that amount.

"THE TWO P'S TOLD IN THE PLEASURE AND PROFIT OF COLD-FRAMES."

On page 573 of our issue for April 15 I mentioned briefly the fact that the Lord & Burnham Co. paid a man for the value of a greenhouse and contents that was broken down by a heavy fall of snow last winter. The Lord & Burnham people did not build the house. They furnished only the plan and supplied most of the material. The owner of the house had one of his happy surprises when the above firm made good his loss. Well, this same firm, Lord & Burnham, 1133 Broadway, New York, has just put out about the prettiest little catalog (title as above) of hot-bed sashes and appliances that I ever saw. It is given to anybody who applies for it, and it ought to be worth a whole dollar to all who are interested in high-pressure gardening. Why, it gave me a thrill in looking it over such as I have hardly felt since I first got hold of one of Peter Henderson's "Gardening for Profit." It is beautifully illustrated; tells you all about how to make either hot-beds or cold-frames, composting the soil, also tables of what to plant, when to plant, and some beautiful pictures of successful high-pressure gardening under sash. Now, if any of our readers have ever felt as though they would like a few hot-bed sashes to play with they had better send for the catalog in question. We can supply the sashes.

Convention and Fair Notices.

Through the courtesy of Mr. Percy Orton, of Northampton, N. Y., we have been favored with the catalog of the Fulton Co. N. Y., agricultural fair, to be held at Johnston, Sept. 2-5. The highest prize in the apriary department is \$5.00, and there are others in proportion worth competing for.

NEWCASTLE, DELAWARE, COUNTY FAIR.

This year Dr. Joel S. Gilliland, of Newark, is superintendent of the apriarian exhibit at the Newcastle Co. fair to be held at Wilmington, Sept. 2-6 inclusive. He will be assisted by Mr. E. M. Miller, of Wilmington.

INDIANA STATE FAIR AT INDIANAPOLIS.

In connection with the foregoing there is quite a liberal premium list to attract bee-keepers who are in a position to make a good exhibit. In two cases the first prize is \$25.00, and in other two the first is \$20.00, with second and third prize in proportion. The date is Sept. 9 to 13 inclusive. Charles Downing is secretary. If you wish to exhibit send for the premium list.

WASHINGTON STATE FAIR BEE EXHIBIT.

Mr. Anson L. White, of North Yakima, has been appointed superintendent of the apriarian exhibit of the State fair to be held at that point Sept. 23-28, which is sufficient guarantee that every thing will be properly supervised. He will personally care for any exhibits sent to him. He is anxious to get in touch with the bee-keepers attending the fair, for the purpose of enlisting them in the Washington State Bee-keepers' Association, which, in conjunction with Pullman College, is endeavoring to carry out the State foul-brood law, with the view of stamping out the disease within the State. Mr. G. A. Graham, North Yakima, is secretary of the fair.

ILLINOIS STATE FAIR.

The officers of the Illinois State Fair mean to do the right thing by the bee-keepers, and offer a number of handsome prizes for apicultural exhibits, which ought to draw many competitors. The premiums offered for comb honey (500 lbs.) are \$20.00 for first, \$15.00 for second, and \$10.00 for third. It is the same for extracted honey - 500 lbs. Candied honey gets similar prizes, but only 300 lbs. is required. Designs in beeswax get the same as comb honey, 50 lbs. being required. There are numerous premiums, ranging from \$15.00 down to \$2.00. Such an array of liberal money prizes ought to draw exhibitors from other States, as the managers say "open to the world," and doubtless they mean it. The fair takes place Sept. 27 to Oct. 5. We shall publish the prize-list later, probably.

TENNESSEE STATE FAIR, NASHVILLE, SEPT. 23 TO 28.

Bee-keeping in Tennessee has recently experienced a revival, and as a consequence the State Fair managers have decided to offer liberal premiums as an inducement to bee-keepers to make up a striking display of what they can do, and it is to be hoped the bee keepers in that section will rise to the occasion with a really handsome display. Mr. J. M. Buchanan, Franklin, Tenn., who is superintendent of the apicultural department, will endeavor to give every exhibitor a square deal.

PREMIUM LIST.

	1	2	3
1. Best 10 lbs. extracted honey.....	\$10	\$ 8	\$ 3
2. Best display of extracted honey.....	15	10	5
3. Best case of comb honey.....	10	7	3
4. Best display of comb honey.....	15	10	5
5. Best display of beeswax.....	10	5	3
6. Nucleus of dark Italian bees.....	5	2	1
7. Nucleus of golden Italian bees.....	5	2	1
8. Nucleus of Caucasian bees.....	5	2	1
9. Nucleus of any other race.....	5	2	1
10. Largest and best display of bees and bee products, etc., by individual exhibitor.....	25	15	10

SCHEDULE OF THE BEE SHOW OF THE WORCESTER COUNTY BEE-KEEPERS' ASSOCIATION, TO BE HELD IN HORTICULTURAL HALL, WORCESTER, MASS., SEPT. 13, 14.

[The following is a complete schedule of the above show, as announced in our last issue.—ED.]

Honey.—In numbers 1 to 5 there will be two classes—one for those living in Massachusetts and one for those outside.

1. For the best 5 lbs. of comb honey in section boxes.

2. For the best crate of comb honey packed for market.

Neatness of package will be considered.

3. For the two best frames of comb honey for extracting.

Weight, color, quality, as well as general appearance, will govern.

4. For the best display of chunk honey.

5. For the best display of comb honey in general. This is open to the taste of the exhibitor.

6. Extracted or strained honey. For the best 5 lbs. of extracted honey in glass. Color, quality, and general neatness will govern.

7. For the most attractive display of extracted honey.

8. *Vinegar.*—For the best display of vinegar made from honey. Color, strength and clearness will govern.

9. *Beeswax.*—For the best pound of beeswax. Softness and color will govern.

10. For the best display of beeswax.

Bees.—All bees must have been raised by the exhibitor. Numbers 11 to 15 are to appear in single-frame nuclei. Each nucleus must contain a queen. Numbers 15 to 17 may be shown as the exhibitor desires.

11. For the best Italians.

12. For the best black or German bees.

13. For the best Carniolan bees.

14. Varieties not scheduled.

15. For the best display of bees.

16. For the best display of queen-bees ready for shipment.

17. For the best display of a queen-rearing outfit showing cells in different stages of development.

18. *General Display.*—For the best display of bees, honey bee furniture, wax, etc. Exhibitor is given full freedom. Products and bees must be of his own raising. Please write to the secretary that space may be reserved.

19. *Cookery.*—For the best cake made with honey, recipe attached.

20. For the best cookies made with honey.

21. For the best display of cake, cookies, and confectionery made with honey.

22. *Photography.*—Photograph of a swarm of bees.

23. Best photograph of a New England apiary.

Displays not scheduled above are solicited. Meritorious exhibits will be awarded a diploma. Manufacturers, tradesmen, and publishers are urged to make a display. Free space will be afforded each exhibitor. Points of merit are neatness, perfection of workmanship, as well as instructiveness and general effectiveness of display.

Communications may be addressed either to the secretary or to A. A. Hixon, Horticultural Hall, Worcester, Mass.

There will be lectures by people prominent in the bee world, both days of the fair.

A. H. ESTABROOK, Sec.

Worcester, Mass.

HONEY-PACKAGES IN TIN

This cut shows a box of two 60-lb. tin cans, which is the standard package for storing and shipping extracted honey. It is far superior to barrels, because there is not the same chance for leakage or taint from the wood; and, being square they economize space. Owing to light honey crops, the last two years, the demand has been light, and we have a good stock bought below the prices ruling at present. To reduce this stock we will ship from Medina any orders mentioning this notice, at the following special prices: One box, two cans, 80 cts.; 10 boxes, \$7.50; 25 boxes or over, at 70 cts. a box. One box of one can, 50 cts.; 10 boxes, \$4.50; 25 boxes or more, at 42 cts. a box.

One-gallon square cans with 1½-inch cap, 100 in a crate, at \$10.00 per 100; 500 or over at \$9.00 per 100; packed 10 in a case at \$1.35 per case; 10 cases, \$12.50.

Sturwold's Show-case.



This case is 28 in. high, 20 in. square, outside measure, top and bottom. The glass of which it is made is 16×24. The case is to be set up in any grocery, drug-store, or any other place of business where you want your honey exhibited or sold. The frame is of chestnut, filled and varnished, and finished in natural grain. Price, plain, \$5; with name and address, \$5.50. As the glass is very apt to be broken in transit, we will ship them, if you prefer, with glass boxed separately, at same price. In flat, no glass or finish, \$2.50; glass included, \$4.00.

THE A. I. ROOT COMPANY,

Screw-cap Honey-gate and Can-screw Wrench.



Price 15 cts.; by mail, 18 cts.

Price 10 cts.; 75 cts. per dozen. By mail, 4 cts. each extra.

We furnish the gate for 1½, 1¾, or 2¼ screw. Other sizes made to order from cans you may furnish.

The wrench fits a 1½ screw, and can be used on 1¾ or smaller by bushing between cap and wrench.

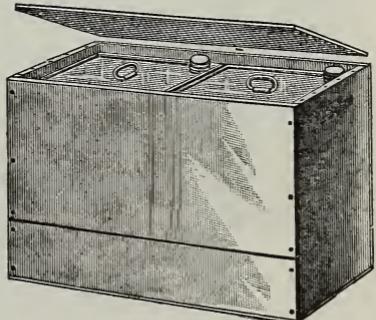
When you order these gates separate from cans we can not guarantee a fit unless you send us a cap from the screw with the order.

Sample Mailing-blocks.

Price, each, 6 cts.; by mail, 8 cts.

These are small wide-mouthed glass bottles, which hold ½ oz. with cork, put up in a mailing-block with top which screws on and is easily removed.

.. :: .. :: MEDINA, OHIO



Honey-Packages in Glass

We have quite a variety of glass packages for putting up honey for retail. We mention first our

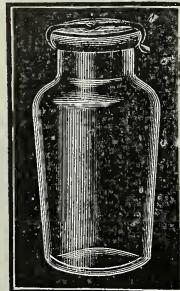


Half-pound Tumbler.

This is shown at the left with a diamond label, No. 95. These include tin cover with wax or parchment paper disk for sealing tight. No labels. Will hold 7 oz. of honey when filled; and the price, \$5.50 per barrel of 32 dozen; 5-bbl. lots at \$5.25. In reshipping-cases of 4 dozen packed ready to reship, when filled, \$1.00 per case; 6 cases, \$5.70; 20 cases or over, at 90 cents per case.

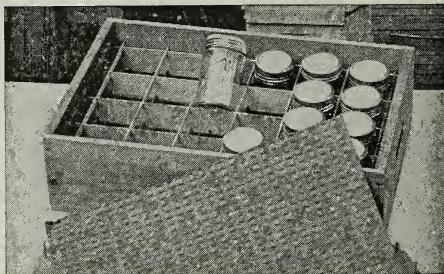
No. 25 Jar.

This holds one pound of honey; has an opal cap with rubber ring and lacquered tin screw rim which seals tight. Packed in reshipping cases of 2 dozen each; price \$1.10 per case; 6 cases, \$6.30; 20 cases or more at \$1.00 per case.



Tiptop Jar.

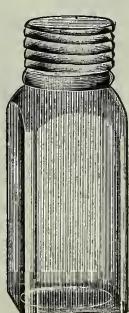
We keep these in two sizes, for half and one pound of honey. The shape of the jar is shown in the cut. It has a glass top, a rubber ring, and a spring-top fastener. Packed a gross in a crate at \$5.00 per gross for 1-lb., or \$4.50 for the half-pound size. We have them also packed in reshipping-cases of 2 dozen each at \$1.10 per case for 1-lb. size; 6 cases, \$5.30; 20 cases or over at \$1.00 per case. Half-pound size, \$1.00 per case; \$5.70 for 6 cases, or 90 cts. per case in 20-case lots.



Simplex Jar.

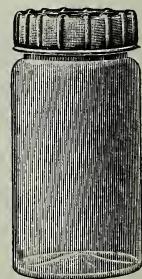
This is one of the handsomest jars we ever handled. The factory making them was wrecked last August, and we have been unable since to secure any more of the size, which holds one pound. We can supply the next larger size, which holds 18 oz. of honey. Packed in reshipping-cases of 2 dozen. Price \$1.15 per case; 6 cases for \$6.60; in 20-case lots or over at \$1.05 per case. We still have at Philadelphia a few cases of the 1-pound size which may be had from there while they last, at the same price as above.

Sq. Hershiser Jar. Jars.



These jars were designed for use in the honey exhibit at the Pan-American Exposition in Buffalo, and are very neat and attractive. They have cork-lined aluminum caps which seal them tight. They are made in four sizes square and three sizes round. The 1-lb. size in each style is shown in the first two cuts at the left. $\frac{1}{4}$ -lb. square Hershiser jars, doz., 50c; \$5.40 per gross
 $\frac{1}{2}$ -lb. " " " " 55c; 6.00 " "
1-lb. " " " " 80c; 9.00 " "
2-lb. " " " " 1.00; 10.80 " "
 $\frac{1}{2}$ -lb. round " " " " 60c; 6.60 " "
1-lb. " " " " 75c; 8.40 " "
2-lb. " " " " 1.10; 12.00 " "

The ordinary square jar to seal with cork, similar to that shown in cut at extreme left, is very largely used for honey. They are made in four sizes. The 1 and 2 lb. sizes are packed $\frac{1}{2}$ gross in a package; the smaller sizes one gross. Price including corks:
5-oz. square jar 35c per dozen; \$3.25 per gross
8-oz. " " " " 45c " " 4.25 " "
1-lb. " " " " 60c " " 5.75 " "
2-lb. " " " " 75c " " 7.50 " "



~~~~~ THE A. I. ROOT COMPANY, MEDINA, OHIO ~~~~